

VALUE ENGINEERING TEAM STUDY

STP-2946 (1) & (2) OLD ALABAMA ROAD Bartow County, GA

PREPARED FOR:



**Georgia Department of Transportation
#2 Capitol Square, SW
Atlanta, Georgia 30334-1002**

PREPARED BY:

U.S. COST



**1200 Abernathy Road, NE
Building 600, Suite 950
Atlanta, Georgia 30328**

29 November 2006

VALUE ENGINEERING TEAM STUDY

TABLE OF CONTENTS

Executive Summary	
Project Description and Background (Phase II and Phase III).....	2
Key Information/Notes.....	5
Summary of Recommendations (Phase II and Phase III).....	13
Proposals	
Roadway/Profile (RW).....	15
Structural/Bridges (SB)	41
Appendix A	
Contact Directory	69
Function Analysis.....	70
Cost Models.....	72
Brainstorming or Speculation Ideas	74
Appendix B	
Team Study Agenda.....	76
Cost Estimate Summary.....	79
Project Drawings.....	88

VALUE ENGINEERING TEAM STUDY

PROJECT DESCRIPTION AND BACKGROUND

Jordan, Jones & Goulding, Inc. was retained by Bartow County, Georgia, to provide Phase I, Phase II, and Phase III design services for the Old Alabama Road corridor. The U.S. Cost team's review focused only on Phases II and III of these projects. The project includes design of a new bypass around the town of Emerson and re-designation of Old Alabama Road (CR 636) as State Route 113. A re-designated SR 113 will re-route traffic destined for I-75, particularly truck traffic, away from Cartersville, which lies just north of Emerson.

There is no computerized traffic model for Bartow County that could be used to estimate traffic diversion and develop traffic forecasts for the Old Alabama Road corridor. An alternative technique was used that estimated diverted traffic based on travel time and distance savings. Traffic forecasts then were developed based on predicted area traffic growth rates, ranging from 2.0 to 3.5 percent per year until the year 2022.

Existing daily traffic along Old Alabama Road ranges from 2,300 to 4,100 vehicles per day. With the improvement to Old Alabama Road, construction of the new Emerson Bypass, and re-designation of these facilities as SR 113, traffic volumes are projected to be between 13,200 and 21,300 vehicles per day along the corridor by the year 2022. Existing SR 113 through Cartersville currently serves from 14,000 to over 19,000 vehicles per day. Despite the diversion to the new SR 113, there still should be future traffic growth on this facility, as much as 28,000 vehicles per day by year 2022. This is due to anticipated growth in Bartow County and the high proportion of currently undeveloped land.

The capacity analyses support the presumption that the improved Old Alabama Road and new Emerson Bypass will require a four-lane, median-divided facility. The following intersection locations were analyzed as well:

- Old Alabama Road/Existing SR 113 (proposed configuration)
- Old Alabama Road/SR 61
- Old Alabama Road/Emerson Bypass
- Emerson Bypass/SR 293 Connector
- Emerson Bypass/Red Top Mountain Road
- Emerson Bypass/I-75 Ramps (northbound and southbound)

The results indicate that all intersections would operate acceptably during Opening Year 2022 peak hours except the Emerson Bypass/Red Top Mountain Road intersection. This location most likely will require signalization from the onset due to predicted heavy turning movements. The remaining intersections are anticipated to require signalization by Design Year 2022. Furthermore, the analyses indicate the need for a second eastbound left turn lane at the Emerson Bypass (SR 113)/SR 293 Connector intersection by the year 2022.

VALUE ENGINEERING TEAM STUDY

PROJECT DESCRIPTION AND BACKGROUND

The traffic study concluded that the construction of a new Emerson Bypass, improvement to Old Alabama Road, and re-designation of this as SR 113 will have a measurable impact on traffic flow in this area of Bartow County. This project will be necessary to accommodate anticipated future growth in Bartow County.

The projects reviewed by the team included Widen and Reconstruct Old Alabama Road, Phase II, and Phase III. They are also to serve as part of the proposed economic development of Bartow County. The Widening and Reconstruction is essential to the effort to reduce the travel demands on the existing corridors through Northwest Georgia and Bartow County.

These improvement projects provide multi-lane access to areas of the State of Georgia that are not served by the interstate and stimulate economic growth and development via an improved transportation network.

The typical road section for these projects consist of a rural 4-lane divided highway with 12 foot lanes separated with a 44' wide depressed median, and Type "B" median breaks; 12 foot wide paved outside shoulders for Phase II and 10 foot wide paved shoulders for Phase III; Two foot wide paved inside shoulders will be provided for both phases. Proposed right-of-way (ROW) would vary with intersection ROW being wider as necessary.

Major structures proposed:

- New parallel bridge over Ward Creek (approximately 160'x41'-3")
- New parallel bridge over Ryle Creek (approximately 160'x41'-3")
- New parallel bridge over Pumpkinvine Creek (approximately 510'x41'-3")
- New parallel bridge over SR 293 and CSX railroad (439'x41'-3")

There are numerous on-grade intersections and driveways proposed at the following locations:

State Route 113	County Road # 699 Old Alabama Road
County Road # 522 Old Alabama	State Route # 293 Connector
County Road # 355 Carnes Road	Two at grade crossings at High School
State Route # 61 Dallas Highway	Riverview Court
County Road # 343 Douthia Ferry Road	New alignment at Old Alabama Road
County Road # 356 Bates Road	
County Road # 362 Pagan Mine Road	

Several wetlands and streams/creeks were identified along the proposed corridor.

VALUE ENGINEERING TEAM STUDY

PROJECT DESCRIPTION AND BACKGROUND

The Design Cost Estimates for the projects indicate the following:

Phase II has an ECC of \$ \pm 37 Million which includes \$ \pm 9 Million for ROW

Phase III has an ECC of \$ \pm 57 Million which includes \$ \pm 11 Million for ROW

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

CONCERNS AND OBJECTIVES:

These three (3) phased projects are part of an overall scheme to Widen, Reconstruct and Realign Old Alabama Road from Red Top Mountain Intersection at I-75 (Phase I) to the new bridge over SR 293 and CSX railroad track; Phase II is construction of new bridge at SR #293 to station 370 + 50; Phase III project runs from station 370 + 50 to Richmond Creek at station 100 + 00. The area is mountainous terrain with narrow traffic patterns, heavy truck traffic, lots of residential growth; and development of commercial and industrial properties. The Phase I project was not part of the Value Engineering Study.

The following are some of the highlighted concerns and objectives noted by the VE team:

Old Alabama Road Improvements

CONCERNS/OBSERVATIONS	PROBLEMS/OBJECTIVES
Phasing of Contracts	Since Phase I (not studied) and Phase II are 3 months apart from being advertised it is recommended they be advertised jointly as one contract due to the new SR 293 Bridge being a transition between projects
Asphalt Option	Not allowing the asphalt pavement option requires a complete demolition of the existing asphalt roads and significant traffic control during construction. Asphalt option should be allowed and reuse of existing pavement in Phase III should be considered.
Bike Lane Location	Currently the bike lanes appear to be too close to the travel lanes, especially in Phase III
On Grade Intersections	The 6% grade is generating excessive cuts and complex construction at the on grade intersections.
Cost Estimate:	The cost per mile, currently estimated at \$+ 10 Mil/mile, appears high. The VE proposals contained in the report will be marked up by 15 %
Phase III - 100 % of existing road is to be replaced	The 6% grade profile and horizontal alignment should be investigated to salvage as much of the existing pavement as feasible.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

CONCERNS/OBSERVATIONS	PROBLEMS/OBJECTIVES
Shoulder and bike lane pavement thickness is excessive	The current design has a uniform 11" concrete thickness for the complete cross section of road, shoulder and bike lane
Temporary detour roads, retaining walls cost, and staging have not been identified (Phase III)	There will be excessive cost to the horizontal and vertical alignment in the current design and will require additional cost for temporary roads, walls and other traffic control features
Stabilization of side slope through deep cuts	The current design needs to be revised for a 3:1 side slope based on the soil characteristics of the area. Temporary shoring will be needed in many areas, especially Phase II.
Bridge Construction	The 439' bridge will be difficult to construct unless the projects are combined or Phase I project is completed prior to Phase II award
Projected Traffic Flows	The projected traffic flows do not quite qualify for a road of this type, but the team understands the need to get truck traffic out of downtown districts is very critical. One proposal was developed as a new two lane road around the towns using the complete ROW. Additional two lanes could be added at a later date. This is a scope reduction idea.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Introduction

U.S. Cost Incorporated conducted the Value Engineering Team Study on Phase II and Phase III for Widening, Reconstruction and Realignment of Old Alabama Road. The V.E. study was conducted for two (2) days, 28-29 November 2006, at the Georgia Department of Transportation Conference Room #264 in Atlanta, GA. The study team was furnished with Phase II and Phase III projects which included Design submittal packages. The following individuals were members of the V.E. team:

Name	Firm	Discipline
Lindsey Gardner, P.E., CVS	U.S. Cost, Inc.	VETL
Cynthia Burney, P.E.	MAAI	Roadway Design
Sam Deeb, P.E.	MAAI	Bridge Engineer
Laland Owens	MAAI	Construction
Lisa Myers	GDOT	VE Director
David Moore, P.E.	GDOT	Project Manager

Information Phase/Function Analysis

The V.E. team was first briefed on the project design by GDOT and JJ&G representatives in an orientation meeting the first day of the V.E. Study. The briefing gave insight into the current design, and also into the aspects of the Widening and Reconstruction project. The briefing included a review of the design requirements and rationale for the location and arrangement of the new parallel roads, in addition to information on the placement of parallel bridges structural systems. Discussions regarding project funding, advertisement dates, required functions, and project criteria followed the design presentation.

As a basic part of the V.E. process, the team conducted a partial function analysis session on Widening and Reconstruction of Old Alabama Road to identify the needs and goals of the project and facilitate the creative idea session, by addressing functions as opposed to the specific design elements.

The Basic Function of the project is to *Enhance Economy*. A strong secondary function is to *Enhance Travel* by Widening, Reconstruction, and Realignment of Old Alabama Road By-Pass. A detailed project function analysis of the characteristics of the project and their relationships is presented in Appendix A.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Risk Analysis

The group identified the following project risk elements, which may impact the Phase II and Phase III Widening, Reconstruction, and Realignment of Old Alabama Road. This exercise served as a catalyst for the Creative Phase of the study, when several ideas were suggested which would mitigate these project construction risks.

Risk Elements:

- Delays and impact on the traveling/commuting public
- Difficulty/placement/movement of bridge beams @ SR 293 (team feels the bridge should be awarded as part of Phase I contract)
- Cherokee Darter solution is costly and should be re-evaluated to allow standard bridge construction
- Deep excavations may encounter rock and appears to be considerable waste
- Cost Impact - No asphalt pavement option for roads or shoulders
- Phase I is difficult due to bridge construction
- Phase II is complicated due to replacing all of the road with concrete and traffic control problems
- Contractor Phasing, Staging, Coordination and Traffic Control
- Poor Progress/Quality By A Low Bid Construction Contractor
- Accidents at -grade intersections
- Interruption to Quarry and truck traffic
- Stabilizing deep cuts as a result of new profiles
- No guard rails at split bridges
- Shortage and inflated cost of petroleum, cement and steel
- Maintaining uninterrupted flow of traffic on existing roads during construction – potential accidents due to multi staging in deep excavations.
- Failure to meet GDOT Schedule
- Lengthy distances between median opening – Controlled access for Phase II and access by permit for Phase III

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Project Criteria

During the meeting, project goals, criteria and sensitivities were also identified. The following prioritized listing identifies the key items of which the V.E. team should be aware. Criteria with a score of 5 or higher were considered of prime importance, and those criteria therefore must be considered in the review of any design alternative. The ranking below is the V.E. teams' impression of the sensitivity of the criteria from discussions held with Georgia DOT and the A/E representatives.

Project Criteria Analysis:

Life Safety	10
Operational Issues	10
Impact on Quarry operations	10
Compliance with approved EIS	10
Constructability	8
GDOT Criteria Compliance	8
Functionality	8
Life Cycle Cost (Analysis)	8
AASHTO 2001 Compliance	7
Local Code Restrictions	7
Maintenance and Operations	6
Cost Savings Impact	2

Creative Phase

The Creative Phase of the V.E. study was initiated the afternoon of the first day of the study. A total of twenty (20) creative ideas were generated for further investigation by the team. Many of the creative ideas focused on enhancements to the roadway safety, line of sight, excavation techniques, alternative pavement sections, plus various other design elements of the Project. Additional ideas were generated reflecting alternative materials based on an understanding of local construction products and materials and the relative costs of installing them.

A listing of all creative ideas on Phase II and Phase III Widening, Reconstruction, and Realignment of Old Alabama Road project is included in Appendix A.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Evaluation Phase

The ideas generated during the Creative Phase were reviewed and evaluated by the VE team during a meeting held on the morning of the second study day. The intent of the meeting was to allow the V.E. team an opportunity to discuss and evaluate the ideas. A few of the V.E. ideas were dropped at that time as being conceptually unacceptable or in conflict with established Criteria, Right of Way (ROW) conflicts, previous agreements, or local construction methods. The ranking system consisted of VE team representatives assigning a designation to each idea. Those ideas, which the V.E. Team felt had the most promise, were given a designation of 1-5 on acceptability and 1-5 on cost impact, for a maximum rating of 10 points. This is a time management tool to identify those proposals that have the greatest potential. Approximately eighteen (18) out of the original twenty (20) creative ideas were deemed promising for further investigation and analysis by the V.E. team.

The time management ranking system used by the VE team is as follows:

FEASIBILITY OF IDEA

- 5 points - Excellent Idea
- 4 points - Good Idea
- 3 points - Fair Idea
- 2 points – Marginal Idea
- 1 point - Poor Idea –do not develop

COST IMPACT

- 5 points - > \$ 1,000,000
- 4 points - \$750,000 to 999,999
- 3 points - \$500,000 to 749,999
- 2 points - \$250,000 to 499,999
- 1 point – zero to \$249,999
- DS – Design Suggestion – sometimes reflects an increase in cost

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Development Phase

The specific proposals found in the body of this report represent the positive results of investigations by the V.E. team on the Widening, Reconstruction, and Realignment of Old Alabama Road projects. Each proposal represents a quality enhancing or cost saving alternative, which is documented by words, drawings and numbers. The proposal format presents the idea, describes the original design element proposed for change and the proposed change, lists the perceived advantages and disadvantages of the proposed change and supports the idea with a detailed cost estimate for the original and proposed design. Where necessary for clarity, the proposal also includes thumbnail design drawings and supporting engineering calculations.

Many of the V.E. proposals may require some level of redesign on specific portions of the project to implement the modification. Further, several of the V.E. ideas may involve modifications to the Criteria, or current goals, of Widening, Reconstruction, and Realignment of Old Alabama Road. These ideas are presented to initiate additional discussion and investigation during the next phase of design.

Presentation Phase

A final presentation was not scheduled for the last day of the study.

Resolution Phase

Upon receipt of the Final Value Engineering Report, Georgia DOT and design team representatives are requested to prepare written comments on the acceptability of each of the V.E. proposals. Responses should include the rationale for accepting, rejecting, or modifying the V.E. proposal.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Basis of V.E. Cost Savings

The cost information for proposals in this report is based on the cost data prepared by the design A/E. The savings presented in the proposals is a general order of magnitude (estimate of the potential savings) if the idea were to be accepted. These figures are solely intended to identify the most attractive design solution, and are not prepared to represent a net deduction to the overall project budget. The costs are in 2006 dollars (escalated for 2 years at 5% inflation per year). All life cycle cost analyses are prepared utilizing Present Worth methodology, a 25-year economic period, a 5.0% net discount factor (inclusive of inflation), and 3% escalation in the cost of utilities. The bid opening for Phase II is March 2007; and bid opening for Phase III is scheduled for mid-year 2008. It should be noted that the total estimated escalation cost may be inadequate and needs to be re-evaluated.

Sustainable/Green Design Proposals

Sustainable design incorporates energy conservation, increased use of renewable energy sources, the reduction or elimination of toxic and harmful substances in facilities, efficiency in resource and material utilization, recycling of building materials, the use of recycled material, the reduction of waste products during both the construction and operation of the facility, and facility maintenance practices that reduce or eliminate harmful effects on people and the natural environment. In keeping with the National Policy objective of building all new facilities with sustainable design features, the VE team proposed sustainable design elements and/or practices. There are no developed sustainable proposals in this report; however, the construction contactor should have the option to employ construction techniques and materials to shorten the bridge construction time and the use of recycled asphalt concrete for pavement surface.

VALUE ENGINEERING TEAM STUDY

SUMMARY OF RECOMMENDATIONS

IDEA NO.	DESCRIPTION	SAVINGS
	PHASE II	
	ROADWAY	
RW-1.0	Combine Phase I and Phase II Into A Single Contract Award.	Change orders and conflicts
RW-2.0	(Emergency Savings) Grade Phase II and Phase III and Install Major Drainage Structures But Only Construct Two New Lanes.	\$5,000,000
RW-4.0	Classify 6% SE Throughout In Lieu Of 8% SE Classification.	\$1,216,475
RW-6.0	Pave 6.5 Ft Of Outside Shoulder And 2 Ft. of Inside Shoulder With Asphaltic Concrete Over Gab In Lieu Of PCC Pavement on Both Phases.	\$900,000
RW-11.0	Realign Intersection At Old Alabama and Cul-de-sac.	\$127,259
	STRUCTURAL	
SB-1.0	Eliminate End Spans And Utilize MSE Retaining Walls With Single Span Across SR 293 and CSX RR.	\$5,568,721
SB-2.0	Utilize Three Sided Prefab Arches To Span Across SR 293 And CSX RR And Reuse The Unclassified Excavation As Fill To Profile.	\$6,246,604
SB-3.0	Utilize A Full Arch Bridge In Lieu Of A Three Span Bridge.	\$680,455

VALUE ENGINEERING TEAM STUDY

SUMMARY OF RECOMMENDATIONS

IDEA NO.	DESCRIPTION	SAVINGS
	PHASE III	
	ROADWAY	
RW-2.0	(Emergency Savings) Grade Phase II and Phase III and Install Major Drainage Structures But Only Construct Two New Lanes.	\$13,813,628
RW-4.0a	Classify 6% SE Throughout In Lieu Of 8% SE Classification.	\$1,432,833
RW-5.0	Change The Pavement Design From PCC Pavement To Asphaltic Concrete Pavement.	\$9,024,188
RW-6.0	Pave 6.5 Ft Of Outside Shoulder And 2 Ft. of Inside Shoulder With Asphaltic Concrete Over Gab In Lieu Of PCC Pavement on Both Phases.	\$2,500,000
RW-7.0	Manipulate The Horizontal and Vertical Alignment To Maximize Use Of Existing Pavement For Phase III.	Design Suggestion
RW-9.0	Re-evaluation How Traffic Will Connect To Phase III On East End.	Design Suggestion
	STRUCTURAL	
SB-4.0	Utilize A Three Sided Arch Over The Ryle Creek In Lieu Of Dual Bridges.	\$1,008,440
SB-5.0	Bridge Construction Staging.	Design Suggestion

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: COMBINE PHASE I AND PHASE II INTO A SINGLE CONTRACT AWARD.

ORIGINAL DESIGN: The proposed let dates are April 2007 for Phase II and July 2007 for Phase I.

PROPOSED CHANGE: The proposed change recommendation is to let Phase I and Phase II together as one contract even if a delay clause is necessary for Phase I.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:			
SAVINGS:			Design Suggestion

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Do not have to haul fill material across R/R track.

Beam delivery to bridge site Via direct access to I-75 is accomplished.

Reduces amount of time the contractor will have to pay salary of railroad signalman.

Superstructure staging of bridge construction equipment and material can be accommodated on the north end.

Contractor coordination is not a problem with one contract.

Shares mobilization cost.

DISADVANTAGES:

Projects are programmed in different fiscal years.

JUSTIFICATION:

A 90 day delay clause is reasonable. Completing Phase I and II concurrently provides the desired connectivity west from I-75 to experience immediate utility of the corridor.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: (EMERGENCY SAVINGS) – GRADE PHASE II AND PHASE III AND INSTALL MAJOR DRAINAGE STRUCTURES BUT ONLY CONSTRUCT TWO NEW LANES.

ORIGINAL DESIGN: The current design is to construct a four lane divided highway with a depressed 44'-0" median following existing Old Alabama Road about six miles, then heads North at Station 415+00 on a new alignment with a new bridge crossing SR 293 and CSX railroad and terminating into Phase I project at Station 480+72.

PROPOSED CHANGE: The proposed recommendation is to grade both phases to template, install all major drainage structures and install base and pavement for two lanes on the proposed four lanes ROW. Construct the other two lanes in the future on the established ROW.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$ 59,107,822		\$ 59,107,822
PROPOSED CHANGE:	\$ 40,255,923		\$ 40,255,923
SAVINGS:			\$ 18,851,889

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$±19,000,000.

Will help with GDOT funding of road projects.

Traffic control would be less complicated and less disruptive to travelers.

Traffic volumes do not indicate a need for 4-lanes until some future time.

Could establish foot print now utilizing 4 lane ROW.

Would probably slow commercial development in the corridor.

Construction plans could be updated while ROW acquisition.

DISADVANTAGES:

Delay the bid date.

Major redesign.

Not politically popular and not feasible at this late stage of design.

Most costly to add lanes in the years to come.

JUSTIFICATION:

Since the projected 2028 Average Daily Traffic barely meets ADT volumes for four lanes, it could be years before four lanes are needed in this corridor.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER: RW-2.0

PAGE NUMBER: 3 of 5

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Major Structures	1				5,962,960
Earthwork/Drainage	1				15,044,883
Base & Paving	1				24,147,713
Erosion Control	1				2,446,973
Traffic Control	1				2,315,257
Other	1				1,480,323
SUBTOTAL:					51,398,106
15 % MARK UP:					7,709,716
TOTAL:					59,107,822

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Major Structures	1				3,248,000
Earthwork/Drainage	1				14,555,500
Base & Paving	1				13,653,650
Erosion Control	1				2,447,000
Traffic Control	1				634,000
Other	1				467,000
SUBTOTAL:					35,005,150
15 % MARK UP:					5,250,773
TOTAL:					40,255,923

SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify) |
|--|--|

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

<u>Category</u>	<u>Phase III</u>	<u>Phase II</u>	<u>Total</u>
Major Structures	3,306,000	2,656,960	5,962,960
Earthwork/Drainage	7,973,000	7,071,883	15,044,883
Base & Paving	16,703,000	7,444,713	24,147,713
Erosion Control	1,233,000	1,213,970	2,446,970
Traffic Control	2,236,000	79,257	2,315,257
Other	1,392,000	88,323	<u>1,480,323</u>
		Total	51,398,106

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

<u>Category</u>	<u>Phase III</u>	<u>Phase II</u>	<u>Total</u>
Major Structures	1,653,000	1,595,000	3,248,000
Earthwork/Drainage	7,749,500	6,806,000	14,555,500
Base & Paving	9,186,650	4,467,000	13,653,650
Erosion Control	1,233,000	1,214,000	2,447,000
Traffic Control	559,000	75,000	634,000
Other	417,000	50,000	<u>467,000</u>
		Total	35,005,150

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-4.0
-------------------------	--------

PAGE NUMBER:	1 of 3
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE II - CLASSIFY 6% SE THROUGHOUT
ILO 8% SE CLASSIFICATION.

ORIGINAL DESIGN: The original design utilizes 0.08 super elevation based on the tables.

PROPOSED CHANGE: The proposed change recommendation is to utilize 0.06 super elevation from the tables on the mainline & 0.04 SE for the side streets.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$6,911,788		\$ 6,911,788
PROPOSED CHANGE:	\$5,695,313		\$ 5,695,313
SAVINGS:			\$ 1,216,475

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-4.0
PAGE NUMBER:	2 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$1,216,475.

Reduce R/W costs.

Less Earthwork.

Quicker to install.

Less disruptive to traffic during construction.

Easier driveways tie-ins.

As per GDOT design policy manual 4.5.2. (0.06 major rural arterials).

DISADVANTAGES:

Additional Design costs.

JUSTIFICATION:

The all around reduction in costs as well as the ease of construction justifies this recommendation.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-4.0
-------------------------	--------

PAGE NUMBER:	3 of 3
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Unclass Excav	1	CY	829,000	\$7.25	6,010,250
SUBTOTAL:					6,010,250
15 % MARK UP:					901,538
TOTAL:					6,911,788

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Unclass Excav	1	CY	683,096	\$7.25	4,952,446
SUBTOTAL:					4,952,446
15% MARK UP:					742,867
TOTAL:					5,695,313

SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER: RW-4.0a

PAGE NUMBER: 1 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE III - CLASSIFY 6% SE THROUGHOUT
ILO 8% SE CLASSIFICATION.

ORIGINAL DESIGN: The original design utilizes 0.08 superelevation based on the tables.

PROPOSED CHANGE: The proposed change recommendation is to utilize 0.06 superelevation from the tables on the mainline & 0.04 SE for the sidestreets.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$ 8,140,850		\$ 8,140,850
PROPOSED CHANGE:	\$ 6,708,017		\$ 6,708,017
SAVINGS:			\$ 1,432,833

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-4.0a
PAGE NUMBER:	2 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$1,432,833

Reduce R/W costs.

Less Earthwork.

Quicker to install.

Less disruptive to traffic during construction.

Easier driveways tie-ins.

As per GDOT design policy manual 4.5.2. (0.06 major rural arterials).

DISADVANTAGES:

Additional Design costs

JUSTIFICATION:

The all around reduction in costs as well as the ease of construction justifies this recommendation.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER: RW-4.0a

PAGE NUMBER: 3 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Unclass Excav	1	CY	1,011,278	7.0	7,079,000
SUBTOTAL:					7,079,000
15 % MARK UP:					1,061,850
TOTAL:					8,140,850

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Unclass Excav	1	CY	683,096	7.0	5,833,058
SUBTOTAL:					5,833,058
15% MARK UP:					874,959
TOTAL:					6,708,017

SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-5.0
-------------------------	--------

PAGE NUMBER:	1 of 3
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE III- CHANGE THE PAVEMENT DESIGN FROM PCC PAVEMENT TO ASPHALTIC CONCRETE PAVEMENT.

ORIGINAL DESIGN: The original design pavement structure is for 11 inches of PCC pavement over 330#/sy asphaltic concrete base and 12 inches of graded aggregate base.

PROPOSED CHANGE: The proposed change recommendation is to utilize 440#/sy-25 mm asphaltic concrete base, 440#/sy -19 mm superpave, & 165#/sy-12.5 mm superpave over 12 inches of graded aggregate base instead of the original design.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$19,951,028		\$ 19,951,028
PROPOSED CHANGE:	\$10,926,840		\$ 10,926,840
SAVINGS:			\$ 9,024,188

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-5.0
PAGE NUMBER:	2 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$9,024,188.

Maintenance of traffic will be simpler without both asphalt and PCC operations.

Quantity of asphaltic concrete leveling will be significantly reduced.

Flexible pavements are less complicated to maintain.

Probable that more of the temporary pavement could be incorporated into the permanent pavement.

DISADVANTAGES:

Would not please the cement association.

Truck volumes could result in rutting, pushing and shoring.

Maintenance efforts will be required more frequent on a flexible pavement road.

JUSTIFICATION:

The desired load bearing capability for the pavement structure can be achieved at a lower cost and construction sequencing will be much simpler.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER: RW-5.0

PAGE NUMBER: 3 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Concrete paving -11”CRC	1	SY	212,000	70	14,840,000
19 mm Asph conc superpave	1	Ton	13,959	80	1,116,720
Asph conc leveling	1	Ton	17,400	80	1,392,000
SUBTOTAL:					17,348,720
15 % MARK UP:					2,602,308
TOTAL:					19,951,028

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
12.5 mm superpave	1	Ton	17,490	80	1,399,200
19 mm superpave	1	Ton	46,640	80	3,731,200
25 mm superpave	1	Ton	46,640	80	3,731,200
Asph Conc leveling	1	Ton	8,000	80	640,000
SUBTOTAL:					9,501,600
15% MARK UP:					1,425,240
TOTAL:					10,926,840

SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-6.0
-------------------------	--------

PAGE NUMBER:	1 of 3
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE II & III- PAVE 6.5 FT OF OUTSIDE SHOULDER AND 2.0 FT OF INSIDE SHOULDER WITH ASPHALTIC CONCRETE OVER GAB INSTEAD OF PCC PAVEMENT ON BOTH PHASE II & III.

ORIGINAL DESIGN: The original design typical section indicates full depth of PCC pavement for shoulders at the widths of 2 ft & 6.5 ft inside shoulder and outside shoulder respectively.

PROPOSED CHANGE: The proposed change recommendation is to pave the inside and outside shoulders at the same width as the typical section but utilize 440#/sy-25mm superpave, 220#/sy-19mm, and 165#/sy-12.5 mm superpave over 12" GAB instead of the original design.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$ 6,411,825		\$ 6,411,825
PROPOSED CHANGE:	\$ 3,019,440		\$ 3,019,440
SAVINGS:			\$ 3,392,385

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-6.0
PAGE NUMBER:	2 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$3,392,385.

Paved shoulders could be more easily removed to add a lane in the future.

Provides better contrast between the travel way & Shoulder.

Bicycle path markings have better target value on asphalt.

Indentation rumble strips are easier to install.

Full depth PCC shoulders are a structural overkill.

DISADVANTAGES:

None apparent.

JUSTIFICATION:

Full depth shoulders are a structural overkill even with the high percentage (10%) of trucks.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER: RW-6.0

PAGE NUMBER: 3 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Concrete paving -11”CRC	1	SY	79,650	70	5,575,5000
SUBTOTAL:					5,575,500
15 % MARK UP:					\$836,325
TOTAL:					6,411,825

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
12.5 mm superpave	1	Ton	6,570	80	525,600
19 mm superpave	1	Ton	8,750	80	700,000
25 mm superpave	1	Ton	17,500	80	1,400,000
SUBTOTAL:					2,625,600
15% MARK UP:					393,840
TOTAL:					3,019,440

SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-7.0
-------------------------	--------

PAGE NUMBER:	1 of 2
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: MANIPULATE THE HORIZONTAL AND VERTICAL ALIGNMENT TO MAXIMIZE USE OF EXISTING PAVEMENT FOR PHASE III.

ORIGINAL DESIGN: Staging plans have not been developed.

PROPOSED CHANGE: Consider utilizing existing pavement on Old Alabama Road to the maximum extent possible for maintenance of traffic when setting alignment for reconstruction of Old Alabama Road.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:			
SAVINGS:			Design Suggestion

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-7.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Could reduce right of way requirements.

It could reduce traffic control costs by having a simpler maintenance of traffic plan.

Reduce temporary pavement.

It would be less frustrating for motorists.

It could maximize the use of concrete paving machines/slip form pavers.

DISADVANTAGES:

There will be additional redesign costs.

Utilizing the existing alignments might encroach on historic boundaries.

JUSTIFICATION:

This is the proper time to evaluate this alternative due to the plans are still very preliminary.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-9.0
-------------------------	--------

PAGE NUMBER:	1 of 2
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: RE-EVALUATION HOW TRAFFIC WILL
CONNECT TO PHASE III ON EAST END.

ORIGINAL DESIGN: The original design shows the western tie in at the beginning of the project shows the project tying into an existing 4 lane roadway with a depressed median.

PROPOSED CHANGE: The proposed recommendation is to show the beginning of the project tying into the existing 2-lane road.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:			
SAVINGS:			Design Suggestion

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

The project needs to be designed as a stand alone project and the roadway west of the project is two lanes.

DISADVANTAGES:

There will be additional redesign costs.

JUSTIFICATION:

The project that is proposed west of Phase III is not scheduled to be used in the near future. Therefore, the current design shows tying to a road that does not exist yet.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER: RW-11.0

PAGE NUMBER: 1 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE II-REALIGN INTERSECTION AT OLD ALABAMA AND CUL-DE-SAC.

ORIGINAL DESIGN: The original design ties-in to old Alabama road at 65°-03'-18".

PROPOSED CHANGE: The proposed change recommends a 90°-00'-00" at the cul-de-sac at existing intersection and create a T-intersection at 395+00.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$ 174,294		\$ 174,294
PROPOSED CHANGE:	\$ 47,035		\$ 47,035
SAVINGS:			\$ 127,259

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-11.0
PAGE NUMBER:	2 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$127,259.

Improves road safety.

DISADVANTAGES:

Additional design costs.

JUSTIFICATION:

The improved safety justifies this recommendation.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-11.0
PAGE NUMBER:	3 of 3

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
12.5 mm	1	Ton	165	80	13,200
19 mm	1	Ton	440	80	35,200
25 mm	1	Ton	880	80	70,400
GAB	1	Ton	1260	25	31,500
SUBTOTAL:					151,560
15 % MARK UP:					22,374
TOTAL:					174,294

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
12.5 mm	1	Ton	45	80	3,600
19 mm	1	Ton	120	80	9,600
25 mm	1	Ton	240	80	19,200
GAB	1	Ton	340	25	8,500
SUBTOTAL:					40,900
15% MARK UP:					6,135
TOTAL:					47,035

SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-1.0
-------------------------	--------

PAGE NUMBER:	1 of 7
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE II- ELIMINATE END SPANS AND
INSTEAD UTILIZE MSE RETAINING WALLS
WITH SINGLE SPAN ACROSS SR 293 & CSX
RR.

ORIGINAL DESIGN: The original design proposes a 3 span dual bridge configuration over SR 293 & CSX railway with Bulb Tee 74 in beams and 62± high piers with 143 endrolls and slope paving.

PROPOSED CHANGE: The proposed design recommends the use of MSE walls 60' high or even less by increasing the end bent cap depth by several feet with a single span over SR 293 and the CSX Railway thereby eliminating the end spans and capitalizing on serious savings without encroaching on the railway's R/W. By eliminating the endrolls, some of the waste excavation from the adjoining hill can be utilized as fill and further reducing the cost of the project.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$ 6,430,455		\$ 6,430,455
PROPOSED CHANGE:	\$ 861,734		\$ 861,734
SAVINGS:			\$ 5,568,721

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-1.0
PAGE NUMBER:	2 of 7

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$5,568,721.

Less construction materials.

Faster construction.

Savings from the reuse of unclassified excavation materials.

DISADVANTAGES:

Very high walls but can be offset by tiered walls or increasing bent cap depths from 2' to 6'-8'.

Not a standard design for deep crevice conditions.

JUSTIFICATION:

The enhanced speed of construction, cost savings, and less materials justifies the recommendation.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER: SB-1.0

PAGE NUMBER: 3 of 7

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Three Span Bridge/Endrolls	7	Lump	2	2,795,850	5,591,700
SUBTOTAL:					5,591,700
15 % MARK UP:					838,755
TOTAL:					6,430,455

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Single Span Bridge/MSE walls	7	Lump	2	1,074,667	2,149,334
Unclassified Excav. Reusal	7	CY	-600,000	2.50	-1,500,000
SUBTOTAL:					749,334
15% MARK UP:					112,400
TOTAL:					861,734

SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

— IS ONE HIGH LONG WHEN PLOTTED FULL SCALE



**U.S. COST
COST MANAGEMENT AND CONTROL CONSULTANTS**



ORIGINAL DESIGN CALCULATIONS

Cost Estimate

3 Span
BT 72/ Endroll

Project :	0	Old Alabama Road
Project Number :	CLA009	
Made By :	HHD	Date : Nov-06
Checked By :	AMG	Date : Mar-06

[illegible]

Bridge Sub Total =	\$2,795,850
Deck Area Per Side (sq ft) = BL (BW) =	18109
Unit Cost (\$ / sq ft) =	\$154

5% Mobilization	\$139,792
5% MOT	\$139,792
2% Contingency	\$55,917

Total Bridge Cost = \$3,131,351

PROPOSED CHANGE CALATIONS

Cost Estimate

Single Span
BT 72/ MSE Walls

Project :	0	Old Alabama Road
Project Number :	CLA009	
Made By :	HHD	Date : Nov-06
Checked By :	AMG	Date : Mar-06

Tag	Pay Item	Description	Quantity	Unit	Unit Cost	Cost
212	500-0100	GROOVED CONCRETE	852.0	SY	\$4.33	\$3,689
213	500-1006	SUPERSTR CONCRETE, CL AA, BR NO -	158.4	LS	\$989.92	\$156,770
215	500-2100	CONCRETE BARRIER	306.0	LF	\$50.49	\$15,450
217	500-3002	CLASS AA CONCRETE	19.5	CY	\$882.77	\$17,198
245	507-9032	PSC BEAMS, AASHTO, BULB TEE, 72 IN, BR NO -	1071.0	LF	\$186.49	\$199,731
249	511-1000	BAR REINF STEEL	3896.3	LB	\$0.89	\$3,468
250	511-3000	SUPERSTR REINF STEEL, BR NO -	15837	LS	\$0.90	\$14,253
254	516-1100	ALUM HANDRAIL, STD 3626	306	LF	\$55.14	\$16,873
267	520-1147	PILING IN PLACE, STEEL H, HP 14 X 73	420	LF	\$50.34	\$21,143
576	627-1020	MSE WALL FACE, 20 - 30 FT HT, WALL NO -	12226.0	SF	\$51.21	\$626,093

Bridge Sub Total = \$1,074,667
Deck Area Per Side (sq ft) = BL (BW) = 6490
Unit Cost (\$ / sq ft) = \$185

5% Mobilization	\$53,733
5% MOT	\$53,733
2% Contingency	\$21,493

Total Bridge Cost = \$1,203,626

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-2.0
-------------------------	--------

PAGE NUMBER:	1 of 7
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE II- UTILIZE THREE SIDED PREFAB ARCHES TO SPAN ACROSS SR 293 & CSX RR AND REUSE THE UNCLASSIFIED EXCAVATION AS FILL TO PROFILE.

ORIGINAL DESIGN: The original design proposes a 3 span dual bridge configuration over SR 293 & CSX railway with Bulb Tee 74 in beams and 62± high piers with 143 endrolls and slope paving.

PROPOSED CHANGE: The proposed design recommends the use of three sided prefabricated arches, specifically a BEBO steel arch that can span in excess of 60 ft, to cross over SR 293 and the CSX Railway thereby eliminating the bridge and reusing the excess unclassified excavation as fill over the arches to achieve the required profile. The waste excavation from the adjoining hill can be utilized as fill to further reduce the cost of the project.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$ 6,430,455	\$ 6,430,455	\$ 6,430,455
PROPOSED CHANGE:	\$ 183,851	\$ 183,851	\$ 183,851
SAVINGS:			\$ 6,246,604

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-2.0
PAGE NUMBER:	2 of 7

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$6,246,604.

Less construction materials.

Faster construction.

Savings from the reuse of unclassified excavation materials.

DISADVANTAGES:

Heavy fill over culverts resulting in more costly design for arches.

Lighting and ventilation required.

JUSTIFICATION:

The enhanced speed of construction, cost savings, and less materials justifies the recommendation.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER: SB-2.0

PAGE NUMBER: 3 of 7

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Three Span Bridge/Endrolls	7	Lump	2	2,795,850	5,591,700
SUBTOTAL:					5,591,700
15 % MARK UP:					838,755
TOTAL:					6,430,455

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Three Sided Arches	7	Lump	2	936,000	1,872,000
Unclassified Excav. Reusal	7	CY	-684,852	2.50	-1,712,130
SUBTOTAL:					159,870
15% MARK UP:					23,981
TOTAL:					183,851

SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

THIS LINE — IS ONE LONG WHEN PLOTTED FULL SCALE



[illegible]

ORIGINAL DESIGN CALCULATIONS

Cost Estimate

3 Span
BT 72/ Endroll

Project : 0 Old Alabama Road
Project Number : CLA009
Made By : HHD Date : Nov-06
Checked By : AMG Date : Mar-06

Tag	Pay Item	Description	Quantity	Unit	Unit Cost	Cost
56	211-0200	BRIDGE EXCAVATION, GRADE SEPARATION	47.7	CY	\$90.35	\$4,310
150	441-0004	CONC SLOPE PAV, 4 IN	8441.23	SY	\$58.97	\$497,779
212	500-0100	GROOVED CONCRETE	1996.0	SY	\$4.33	\$8,643
213	500-1006	SUPERSTR CONCRETE, CL AA, BR NO -	443.7	LS	\$989.92	\$439,257
215	500-2100	CONCRETE BARRIER	878.0	LF	\$50.49	\$44,330
217	500-3002	CLASS AA CONCRETE	955.3	CY	\$882.77	\$843,274
245	507-9032	PSC BEAMS, AASHTO, BULB TEE, 72 IN, BR NO -	3073.0	LF	\$186.49	\$573,084
249	511-1000	BAR REINF STEEL	254099.0	LB	\$0.89	\$226,148
250	511-3000	SUPERSTR REINF STEEL, BR NO -	97620	LS	\$0.90	\$87,858
254	516-1100	ALUM HANDRAIL, STD 3626	878	LF	\$55.14	\$48,413
267	520-1147	PILING IN PLACE, STEEL H, HP 14 X 73	452	LF	\$50.34	\$22,754

Bridge Sub Total = \$2,795,850

Deck Area Per Side (sq ft) = BL (BW) = 18109

Unit Cost (\$ / sq ft) = \$154

5% Mobilization	\$139,792
5% MOT	\$139,792
2% Contingency	\$55,917

Total Bridge Cost = \$3,131,351

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:

SB-2.0

PAGE NUMBER:

7 of 7

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

Three sided arches cost per linear foot=\$3000/LF

Width of bridges total=112 ft.

Length of three sided arches over SR 293 & CSX=112ft. per side.

Additional length on either side of the bridges to achieve a 2:1 side slopes=50ft.x2:1=100ft

Cost of an Arch=(112+2*100)*1*3000=\$936,000

Total area needed to fill as measured from Microstation=145,500 ft²*112 ft=16,296,000 ft³

Side slopes area=100ft*50*1/2*439ft*2sides= 2,195,000 ft³

Total Fill Volume = (2,195,000+16,296,000)/27= 684,852 cy.

Unclassified excavation=687,532 cy

Therefore, the excess waste is almost =0 or balances out. Which relates to a conservative savings of \$2.50 from the unit price of \$7.00 for unclass excav.

Therefore Fill Savings = \$2.50*684,852 cy=\$1,712,130

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-3.0
-------------------------	--------

PAGE NUMBER:	1 of 5
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE II- UTILIZE A FULL ARCH BRIDGE
ILO A THREE SPAN BRIDGE.

ORIGINAL DESIGN: The original design proposes a 3 span dual bridge configuration over SR 293 & CSX railway with Bulb Tee 74 in beams and 62± high piers with 143 endrolls and slope paving.

PROPOSED CHANGE: The proposed design recommends the use of a full Arch bridge to span across both SR 293 & CSX Railway with slanted legs as end foundations.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$6,430,455		\$ 6,430,455
PROPOSED CHANGE:	\$5,750,000		\$ 5,750,000
SAVINGS:			\$ 680,455

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$680,455.

Less construction time on foundations.

Less foundations and footings.

Single span openings.

Two foundations per bridge only.

Esthetically advantageous.

Possible total construction cost reductions.

DISADVANTAGES:

Construction time.

Forming.

Construction crew expertise availability.

JUSTIFICATION:

The enhanced speed of construction, cost savings, and less materials justifies the recommendation.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER: SB-3.0

PAGE NUMBER: 3 of 5

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Three Span Bridge/Endrolls	7	Lump	2	2,795,850	5,591,700
SUBTOTAL:					5,591,700
15 % MARK UP:					838,755
TOTAL:					6,430,455

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Arch Bridge	7	Lump	1	5,000,000	5,000,000
SUBTOTAL:					5,000,000
15% MARK UP:					750,000
TOTAL:					5,750,000

SOURCES

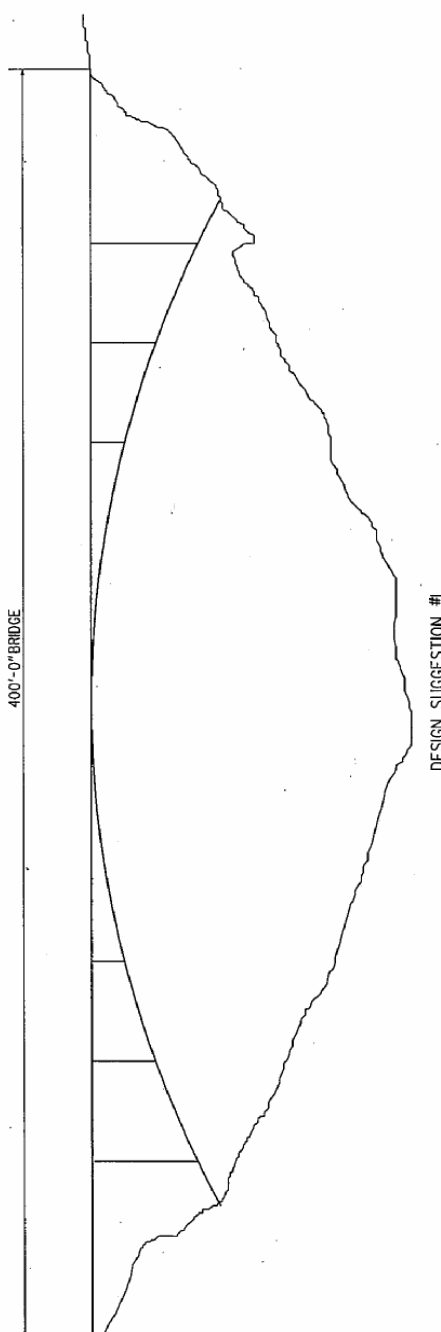
- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

THIS LINE -> SI AND NON MONO NON POLYMERIZABLE



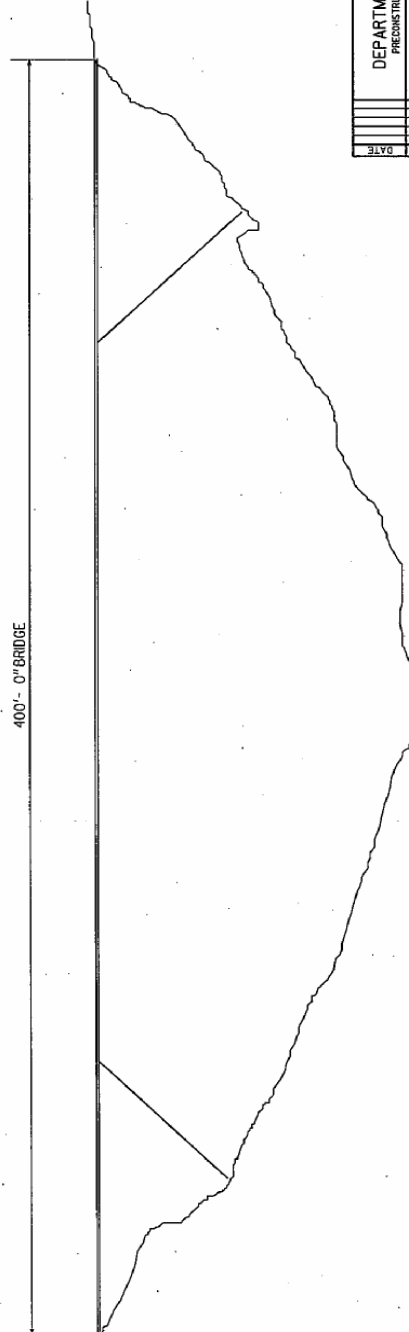
PROPOSED CHANGE SKETCH/DETAIL

STATE GA	PROJECT NAME 	SHEET NO. 	TOTAL SHEETS
-------------	------------------	---------------	------------------



400'-0" BRIDGE

DESIGN SUGGESTION #1
ARCH BRIDGE



400'-0" BRIDGE

DESIGN SUGGESTION #2
SLANTED LEG BRIDGE

GEORGIA DEPARTMENT OF TRANSPORTATION PRECONSTRUCTION DIVISION-OFFICE OF BRIDGE DESIGN	
DESIGN SUGGESTIONS SB-3.0 OLD ALABAMA ROAD OVER SR 293 & CSX RAILWAY BARTOW COUNTY STP-2946 (2)	
NAME 	X
DATE 	X

BRIDGE SHEET X OF X	X
------------------------	---

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-4.0
-------------------------	--------

PAGE NUMBER:	1 of 7
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE III- UTILIZE A THREE SIDED ARCH OVER THE RYLE CREEK ILO DUAL BRIDGES.

ORIGINAL DESIGN: The original design proposes dual bridges over the Ryle Creek with clear spans to avoid an endangered species.

PROPOSED CHANGE: The proposed design recommends the use of three sided prefabricated arches to span over the Ryle creek for faster and cheaper construction.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$ 1,394,840		\$ 1,394,840
PROPOSED CHANGE:	\$ 386,400		\$ 386,400
SAVINGS:			\$ 1,008,440

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	2 of 7

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Total life cycle cost savings of \$1,008,440.

Less construction materials.

Faster construction.

DISADVANTAGES:

Spanning the overbank is required, thus only a specific BEBO arch is possible as an alternative.

JUSTIFICATION:

The enhanced speed of construction, cost savings, and less materials justifies the recommendation.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER: SB-4.0

PAGE NUMBER: 3 of 7

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Three Span Bridges/Endrolls	7	Lump	2	606,452	1,212,904
SUBTOTAL:					1,212,904
15 % MARK UP:					181,936
TOTAL:					1,394,840

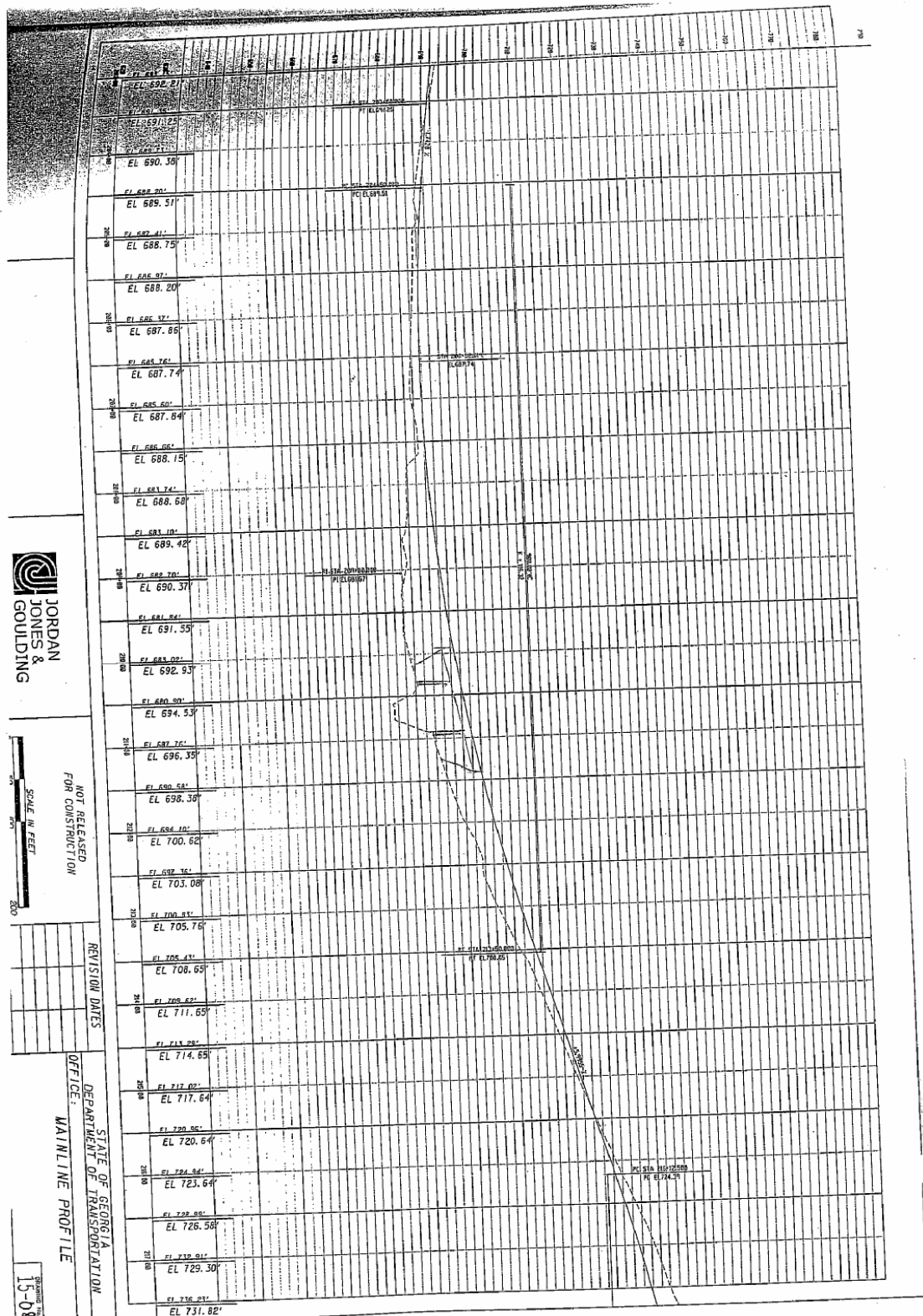
PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Three Sided Arche	7	Lump	1	336,000	336,000
SUBTOTAL:					336,000
15% MARK UP:					50,400
TOTAL:					386,400

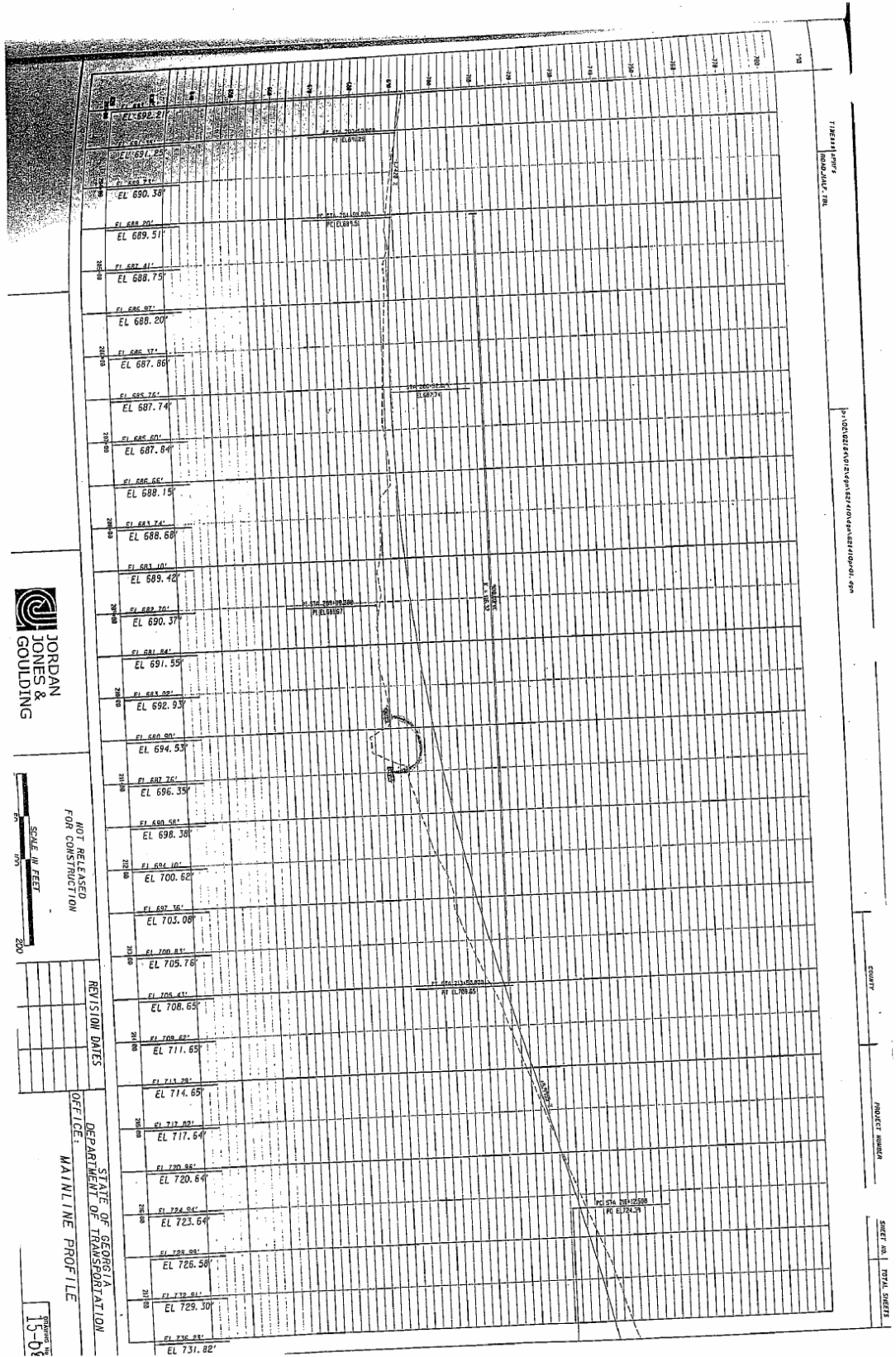
SOURCES

- | | |
|--|--|
| 1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual | 5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (GDOT Mean Summary) |
|--|--|

ORIGINAL DESIGN SKETCH/DETAIL



PROPOSED CHANGE SKETCH/DETAIL



ORIGINAL DESIGN CALCULATIONS

Cost Estimate

3 Span

Type II / Endroll

Project :	0	Old Alabama Road
Project Number :	CLA009	
Made By :	HHD	Date : Nov-06
Checked By :	AMG	Date : Mar-06

Tag	Pay Item	Description	Quantity	Unit	Unit Cost	Cost
57	211-0300	BRIDGE EXCAVATION, STREAM CROSSING	35.9	CY	\$31.41	\$1,126
212	500-0100	GROOVED CONCRETE	880.0	SY	\$4.33	\$3,810
213	500-1006	SUPERSTR CONCRETE, CL AA, BR NO -	155.8	LS	\$989.92	\$154,196
215	500-2100	CONCRETE BARRIER	320.0	LF	\$50.49	\$16,157
217	500-3002	CLASS AA CONCRETE	171.4	CY	\$882.77	\$151,313
240	507-9002	PSC BEAMS, AASHTO TYPE II, BR NO -	960.0	LF	\$121.73	\$116,861
249	511-1000	BAR REINF STEEL	40280.7	LB	\$0.89	\$35,850
250	511-3000	SUPERSTR REINF STEEL, BR NO -	41278	LS	\$0.90	\$37,150
254	516-1100	ALUM HANDRAIL, STD 3626	320	LF	\$55.14	\$17,645
267	520-1147	PILING IN PLACE, STEEL H, HP 14 X 73	388	LF	\$50.34	\$19,532
438	603-2024	STN DUMPED RIP RAP, TP 1, 24 IN	939.2	SY	\$51.48	\$48,351
446	603-7000	PLASTIC FILTER FABRIC	939.2	SY	\$4.75	\$4,461

Bridge Sub Total = \$606,452

Deck Area Per Side (sq ft) = BL (BW) = 6600

Unit Cost (\$ / sq ft) = \$103

5% Mobilization	\$30,323
5% MOT	\$30,323
2% Contingency	\$12,129

Total Bridge Cost = \$679,227

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	7 of 7

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

Three sided arches cost per linear foot=\$3000/LF

Length of bridges total=112 ft.

Width of Arch 60-70 ft BEBO ARCH

Cost of an Arch=112*3000=\$336,000

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-5.0
-------------------------	--------

PAGE NUMBER:	1 of 2
---------------------	--------

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

PROPOSAL DESCRIPTION: PHASE II- BRIDGE CONSTRUCTION STAGING.

ORIGINAL DESIGN: The original design proposes a 3 span dual bridge configuration over SR 293 & CSX railway with Bulb Tee 74 in beams and 62± high piers with 143 endrolls and slope paving. The construction of the bridge will require very specialized equipment, methods, forms, and heavy cranes to construct the 62'-0" high piers and the placement of the 74 in Bulb Tees.

PROPOSED CHANGE: The proposed design recommends the completion of Phase I for the ease of transporting the 153'-0" long Bulb Tees of I-75 and the placement of these beams from the top. Moreover, the construction of the piers has to occur along the critical path of Phase I completion for the placement of the beams to occur from the top and not from the bottom.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:			
SAVINGS:			Design Suggestion

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: STP-2946 (1) & (2) OLD ALABAMA ROAD

PROJECT LOCATION: Georgia DOT - Bartow County, Georgia

ADVANTAGES:

Less construction equipment.

Ease of construction.

Easier placement of beams.

Easier access to the site for the placement of the beams.

DISADVANTAGES:

Time dependent on Phase I completion.

JUSTIFICATION:

The enhanced ease of construction and heavy equipment cost savings justifies the recommendation.

VALUE ENGINEERING TEAM STUDY

VE STUDY SIGN-IN SHEET

Project Nos.: STP-2946(1)&(2)

County: Bartow PI Nos.: 621410 & 621415

Date: November 28 & 29, 2006

NAME	EMPLOYEE ID NO.	DOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
Lisa L. Myers	00244168	Engineering Services	404-651-7468	lisa.myers@dot.state.ga.us
Laland Owens		MAAI	706-865-4316	
Cynthia Burner		MAAI	904-864-8602	cburner@maai.net
LINDSEY GARDNER		U.S. Cost	757-496-3055	LGARDNER@USCOST.COM
Sam Deak		MAAI	770-263-5945	sdeak@maai.net
David Moore	00185871	GDOT DG	770-387-3623	David.Moore@DOT.STATE.GA.US
DAVID W. RAY	00350030	GDOT DL	770-387-3623	david.ray@dot.state.ga.us
SAM WILLIAMS		JTG	678-333-0505	swilliams@jtg.com
LISA WESLEY	00323864	GDOT DL	770-387-3680	lisa.wesley@dot.state.ga.us
Quinn Hazelbaker	00890150	GDOT-DEL	404-699-6981	quinn.hazelbaker@dot.state.ga.us
Doug Franks	00809138	GDOT-Bridge	404-656-5289	douglas.franks@dot.state.ga.us
M. Nabil Raad	00729514	TMC, OTS&D	404-336	M.nabil.raad@dot.state.ga.us
Darrell Church		JTG	678-333-0486	dchurch@jtg.com

VALUE ENGINEERING TEAM STUDY

FUNCTION ANALYSIS

The following functions were identified during discussions with the Georgia DOT and Jordan Jones and Goulding representatives (design team consultants) on the first day of the study. These two word functions consist of an active verb, and a quantifiable (measurable) noun. The functions represent the proposed capital improvement expenditures of, and assist the V.E. team in becoming familiar with the needs of the project and the long-term goals for these projects. The Basic Function of the project is to “Enhance Economy”. The following are considered by the V.E. team to be Secondary and Supporting Functions.

Verb	Noun	Verb	Noun
Meet	Budget	Improve	Commuting
Reduce	Cost	Maintain	Surface
Optimize	Resources	Reduce	Risk
Expand	Development	Identify	Centerline
Adjust	Grade	Identify	Edge
Serve	Communities	Reuse	Materials
Serve	Public	Package	Contracts
Protect	Rivers	Protect	Fish/Darters
Satisfy	Users	Develop	Alternatives
Support	Councils	Define	Performance
Minimize	Lawsuits	Develop	Specification
Improve	Access	Reduce	Liability
Enhance	Image	Re-cycle	Materials
Enhance	Signage	Drain	Median
Reduce	Risk	Enhance	Maintainability
Relieve	Traffic	Minimize	Relocations
Enhance	Economy	Expedite	Travel
Reduce	Delays	Improve	Functions
Maintain	Passage	Improve	Drainage
Improve	Constructability	Correct	Drainage
Benefit	Community	Protect	Environment

VALUE ENGINEERING TEAM STUDY

FUNCTION ANALYSIS

Verb	Noun	Verb	Noun
Improve	Flow	Accommodate	Development
Increase	Capacity	Reduce	Risks
Add	Lanes	Accommodate	Breakdowns
Increase	Speeds	Protect	Species
Reduce	Delays	Minimize	Mitigation
Straighten	Alignment	Segregate	Materials
Improve	Line-of-Sight	Store	Materials
Improve	Visibility	Access	Materials
Enhance	Visibility	Access	Storage
Straighten	Road	Remove	Soils
Reduce	Interruptions	Protect	Wetlands
Reduce	Delays	Relocate	Soils
Identify	Passing	Bridge	Creeks
Accommodate	Passing	Minimize	Erosion
Minimize	Intersections	Contain	Flow
Improve	Intersections	Control	Flow
Reduce	Accidents	Stage	Materials
Improve	Safety	Complete	Corridor
Separate	Lanes	Reduce	Congestion
Add	Lanes	Satisfy	Codes
Install	Medians	Meet	Schedules
Enhance	Definition	Meet	Budget
Communicate	Changes	Reduce	Cost
Assure	Safety	Improve	Functions
Accommodate	Hauling	Satisfy	Agencies
Expedite	Hauling	Utilize	Guidelines
Minimize	Hauling	Construct	Bridges
Control	Traffic	Align	Bridge
Maintain	Passage	Support	Tourism
Phase	Construction	Access	Recreation
Utilize	Resources	Protect	Species
Maximize	Utilization	Improve	Weaving
Protect	Landmarks	Help	Commuters
Guide	Traffic	Satisfy	Public
Transmit	Information	Satisfy	Commuters
Manage	Traffic	Support	Weight

VALUE ENGINEERING TEAM STUDY

COST MODEL

OLD ALABAMA ROAD - PHASE II BARTOW COUNTY, GEORGIA

	COST	% OF
	\$	TOTAL
RIGHT OF WAY - ESTIMATED WAG	\$9,100,000	24.57%
UNCLASSIFIED EXCAVATION	\$6,941,839	18.74%
CONCRETE 11" THICK	\$4,183,988	11.30%
AGGREGATE SURFACE COURSE	\$3,954,572	10.68%
GRADED AGGREGATE BASE COURSE, INCL MATERIAL	\$3,394,383	9.16%
BRIDGE OVER SR 293 & CSX	\$3,068,789	8.29%
CLEARING AND GRUBBING	\$1,536,821	4.15%
RECYCLED ASPHALT CONCRETE 19 MM (SR 293 & INTERSECTION)	\$999,057	2.70%
EROSION CONTROL TEMPORARY	\$718,231	1.94%
EROSION CONTROL PERMANENT	\$683,903	1.85%
CLASS A CONCRETE & REINFORCEMENT	\$614,134	1.66%
STORM DRAINAGE PIPE - SIZES 18" TO 42"	\$483,510	1.31%
FLARED END SECTIONS FOR STORM DRAIN PIPE	\$255,894	0.69%
MISC.	\$233,794	0.63%
GUARD RAIL AND ANCHORAGE	\$181,708	0.49%
PRECAST CONCRETE MEDIAN BARRIER - METHOD 3	\$138,861	0.37%
BAR REINFORCEMENT STEEL	\$131,578	0.36%
CATCH BASINS AND DROP INLETS	\$121,149	0.33%
SIGNS, STRIPS, SIGNALS & LIGHTS	\$101,908	0.28%
TRAFFIC CONTROL (CONTRACTOR)	\$91,542	0.25%
FIELD ENGINEER	\$87,588	0.24%
FOUNDATION BACKFILL MATERIAL	\$13,783	0.04%
TOTALS {ACH ITEM IS MARKED-UP 15%(10+5)}	\$37,037,032	100.00%

VALUE ENGINEERING TEAM STUDY

COST MODEL

OLD ALABAMA ROAD - PHASE III BARTOW COUNTY, GEORGIA

	COST	% OF
	\$	TOTAL
RIGHT OF WAY - ESTIMATED WAG	\$11,000,000	20.15%
UNCLASSIFIED EXCAVATION (1,011,278 CY)	\$8,176,245	14.97%
CONCRETE 11" THICK	\$6,839,910	12.53%
12" GAB - AGGREGATE SURFACE COURSE - CIP CONCRETE	\$5,544,000	10.15%
19 MM SUPERPAVED UNDER 11' CONCRETE - (48,100 TONS)	\$4,444,440	8.14%
TRAFFIC CONTROL (CONTRACTOR)	\$2,582,580	4.73%
BRIDGE OVER PUMPKINVINE CREEK	\$2,204,895	4.04%
INFLATION FOR ONE EXTRA YEAR 5% (2008)	\$1,824,000	3.34%
CLEARING AND GRUBBING	\$1,628,550	2.98%
19 MM SP LEVELING UNDER 11' CONCRETE - (17,400 TONS)	\$1,607,760	2.94%
EROSION CONTROL TEMPORARY & PERMANENT	\$1,424,115	2.61%
PRECAST CONCRETE MEDIAN BARRIER - METHOD 3 & 4	\$1,084,545	1.99%
SPECIAL FEATURES TO PROTECT DARTERS & FILTER WATER	\$924,000	1.69%
BRIDGE OVER WARD CREEK	\$778,828	1.43%
BRIDGE OVER RYLE CREEK	\$778,828	1.43%
STORM DRAINAGE PIPE - SIZES 18" TO 42" (WITH FLARED ENDS)	\$634,095	1.16%
UTILITY RELOCATION	\$450,000	0.82%
LONGITUDINAL STORM DRAIN PIPE	\$398,475	0.73%
CULVERTS AND CLASS "A" CONCRETE	\$389,235	0.71%
12" GAB FOR TEMPORARY PAVEMENT	\$352,275	0.65%
SIGNING & MARKINGS	\$307,230	0.56%
GRASSING	\$232,155	0.43%
TEMPORARY SUPERPAVED ASPHALT (1400 TONS)	\$129,360	0.24%
GUARD RAIL AND ANCHORAGE	\$125,895	0.23%
APPROACH SLABS	\$90,090	0.17%
TOTALS {EACH ITEM IS MARK-UP 15% (10+5)}	\$53,951,506	100.00%

BRAINSTORMING OR SPECULATION

PROJECT TITLE: Widening, Reconstruction & Realignment of Old Alabama Rd

PROJECT LOCATION: Bartow County, Georgia

NUMBER	IDEA	RANK
ROADWAY (RW)		
1.0	Combine Phase I and Phase II into a single construction contract	DS
2.0	Build a new two lane road on a four lane ROW	
3.0	Allow 8% grade ilo 6% grade and classify the project as a Mountainous area	Drop
4.0	Classify 6% SE throughout ilo 8% SE classification for both Phase II & Phase III	DS
5.0	Phase III – Change/allow the contractor option to install Asphaltic concrete pavement	5/5
6.0	Change to Asphaltic concrete shoulders for Phase II and Phase III ilo full depth 11” CIP concrete	5/5
7.0	Phase III – Retain a large % of existing Asphaltic concrete road and build new parallel double lane road adjacent to existing. Changes the design to asphalt and eliminates the complete replacement of the existing road with concrete	3/5
8.0	Run cost comparison on Asphaltic concrete road verses 11” concrete road	DS
9.0	Re-evaluate how existing two traffic lanes will connect to Phase III new four lane highway on the West End	DS
10.0	Phase II - Evaluate surface gravel quantities.	DS
11.0	Phase II Realign intersection of New and Old Alabama Road and cul-de-sac	DS

BRAINSTORMING OR SPECULATION

PROJECT TITLE: Widening, Reconstruction & Realignment of Old Alabama Rd

PROJECT LOCATION: Bartow County, Georgia

NUMBER	IDEA	RANK
BRIDGE		
1.0	Phase II – Install retaining walls ilo end spans as designed	4/5
2.0	Phase II – Use three sided arch ilo new bridge by utilizing excess fill at SR 293 and CSX railroad at station 480+72. Terminating point for Phase I	3/4
3.0	Phase II – Construct arch type bridge ilo three span bridge as designed. Terminating point for Phase I	3/5
4.0	Phase III – Provide a three sided arch at Ryle Creek ilo bridge as shown	3/4
5.0	Phase III – Extend the existing box culvert ilo constructing bridge at Ward Creek since Darter was not observed in this location.	Drop
6.0	Phase II – Develop a phasing schedule for construction of new bridge that will not conflict with construction contractor for Phase I contract	DS
7.0	Phase II – Combine and award Phase I and Phase II as one construction contract to avoid major coordination problems between to different contractors.	DS
8.0	Remove construction of new bridge from Phase II contract to Phase I contract	DS

VALUE ENGINEERING & CONSTRUCTABILITY WORKSHOP AGENDA

STP – 2946 (1) & (2)
P I NO. 621410 & 621415

BARTOW COUNTY, GEORGIA

16 HOUR - V.E. STUDY
28-29 November 2006

The value engineering workshop for the subject project will be conducted for two (2) days from 28-29 November 2006, at **Georgia Department of Transportation, Engineering Services Office Conference Room #264, #2 Capitol Square, Atlanta, GA; POC – Lisa Myers @ (404) 651-7468 voice, (404) 463-6161 FAX**

TUESDAY	0800 - 0815	Introduction Phase	Lindsey Gardner, P.E., CVS Team Leader, U.S. Cost, Inc. (V.E. Team Only)
		<i>The VETL will review previous events along with activities planned for the week and outline several areas which may be investigated by the V.E. team.</i>	
	0815 - 1000	Review of Project Plans	V.E. Team Only
		<i>The team members will review the project plans, cost estimates, available calculations, cost models, and cost bar graphs to gain a working knowledge of the project.</i>	
	1000 - 1200	Project Design Briefing	V.E. Team; A/E, GDOT
		<i>The A/E project design manager will discuss the project requirements and the proposed design solution(s) in some detail. Photos of the project site may also be presented for review by the design team. The V.E. team members will ask questions as appropriate to completely understand the project requirements as established by the user and the proposed design solution (both alternatives considered and those recommended by the design team).</i>	
	1200-1300	Lunch	

TUESDAY (CONTINUED)

1300 - 1500

Function Analysis Phase V.E. Team

The V.E. team will discuss the required functions of the facility to meet the mission of the project.

1500 - 1800

Creative Phase V.E. Team

The V.E. team will creatively review, (Brainstorm), and tabulate possible design alternatives for the project. While the designer's solution will serve as the "baseline", the team will identify alternatives not in the recommended solution, but deserving of further investigation. Each project feature will be carefully analyzed with the basic questions in mind:

What is the system/item?

What does it do(what is its basic function)?

What must it do?

What does it cost?

What is the item worth?

What else will do the same, or a better job?

What does that alternative cost?

During the creative phase, the team will not judge the ideas. The essential requirements for the project, however, must always be considered.

WEDNESDAY

0800 - 900

Analysis Phase V.E. Team

During this phase, all of the ideas or alternatives will be ranked according to their potential for life-cycle (25-year) cost reduction and the potential for acceptance by GDOT, Engineering Designers, and other appropriate parties.

930 - 1000

Project Assignments VETL

Each team member will be assigned a number of ideas for further development. The ideas will be those with the highest rankings. In general, the ideas will be assigned according to technical discipline; road design, structures, geotechnical, constructability, etc..

1000 - 1200 **Development Phase** V.E. Team

During the development phase, each team member will gather information and prepare written proposals for those ideas assigned to him/her. These may require additional discussions with the designer, GDOT representatives, outside contractors and suppliers, and other specialists to fully define the alternative. The team members will prepare sketches, perform calculations and develop other data to support each proposal. In addition, each team member will prepare estimates of costs for each alternative as originally designed, and as proposed by the V.E. team. Life-cycle costs for operation, maintenance and related annual costs will also be considered.

1200 – 1300 **Lunch**

1300 - 1800 **Development Phase** V.E. Team

1800 - **Summary of Results/Workshop Conclusion VETL**

The study will be concluded. Mutually exclusive items will be identified in the summary. The final report will be delivered to interested parties within two weeks of the study's conclusion.

OLD ALABAMA ROAD PHASE II
STP-2946(2); 621415

COST ESTIMATE

Estimate Report for file "STP 2946(2) OLD ALABAMA ROAD"

Section ROADWAY					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	79256.88	TRAFFIC CONTROL -	79256.88
153-1300	1	EA	75833.87	FIELD ENGINEERS OFFICE TP 3	75833.87
201-1500	1	LS	1300581.26	CLEARING & GRUBBING -	1300581.26
205-0001	829000	CY	7.25	UNCLASS EXCAV	6010250.00
207-0203	240	CY	49.72	FOUND BK FILL MATL, TP II	11932.80
310-1101	168900	TN	17.40	GR AGGR BASE CRS, INCL MATL	2938860.00
318-3000	168830	TN	20.28	AGGR SURF CRS	3423872.40
402-3190	13800	TN	62.68	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	864984.00
413-1000	11700	GL	1.57	BITUM TACK COAT	18369.00
430-0158	48300	SY	75.00	PLAIN PC CONC PAVMT, CL3, 11 INCH THK	3622500.00
433-1000	510	SY	173.26	REINF CONC APPROACH SLAB	88362.60
500-3101	910	CY	541.65	CLASS A CONCRETE	492901.50
500-3800	40	CY	970.41	CLASS A CONCRETE, INCL REINF STEEL	38816.40
511-1000	128000	LB	0.89	BAR REINF STEEL	113920.00
550-1180	2100	LF	38.76	STORM DRAIN PIPE, 18 IN, H 1-10	81396.00
550-1240	400	LF	50.15	STORM DRAIN PIPE, 24 IN, H 1-10	20060.00
550-1300	100	LF	62.56	STORM DRAIN PIPE, 30 IN, H 1-10	6256.00
550-1360	190	LF	77.29	STORM DRAIN PIPE, 36 IN, H 1-10	14685.10
550-1421	500	LF	114.21	STORM DRAIN PIPE, 42 IN, H 10-15	57105.00
550-1481	1500	LF	152.95	STORM DRAIN PIPE, 48 IN, H 10-15	229425.00
550-2180	215	LF	29.73	SIDE DRAIN PIPE, 18 IN, H 1-10	6391.95
550-2300	75	LF	44.05	SIDE DRAIN PIPE, 30 IN, H 1-10	3303.75
550-4118	14	EA	554.70	FLARED END SECTION 18 IN, SIDE DRAIN	7765.80
550-4130	2	EA	483.19	FLARED END SECTION 30 IN, SIDE DRAIN	966.38
550-4218	9	EA	695.86	FLARED END SECTION 18 IN, STORM DRAIN	6262.74
550-4224	152	EA	846.03	FLARED END SECTION 24 IN, STORM DRAIN	128596.56
550-4230	23	EA	771.26	FLARED END SECTION 30 IN, STORM DRAIN	17738.98
550-4236	1	EA	1164.48	FLARED END SECTION 36 IN, STORM DRAIN	1164.48
550-4242	1	EA	1550.75	FLARED END SECTION 42 IN, STORM DRAIN	1550.75
550-4418	4	EA	451.47	FLARED END SECTION, 18 IN, SLOPE DRAIN	1805.88
550-4424	14	EA	549.15	FLARED END SECTION, 24 IN, SLOPE DRAIN	7688.10
573-2006	1000	LF	16.46	UNDERR PIPE INCL DRAINAGE AGGR, 6 IN	16460.00
576-1018	380	LF	32.53	SLOPE DRAIN PIPE, 18 IN	12361.40
576-1024	400	LF	47.98	SLOPE DRAIN PIPE, 24 IN	19192.00
622-1033	4840	LF	24.84	PRECAST CONCRETE MEDIAN BARRIER, METHOD 3	120225.60
634-1200	83	EA	104.89	RIGHT OF WAY MARKERS	8705.87
641-1200	7570	LF	16.46	GUARDRAIL, TP W	124602.20
641-5001	13	EA	576.99	GUARDRAIL ANCHORAGE, TP 1	7500.87
641-5012	15	EA	1681.31	GUARDRAIL ANCHORAGE, TP 12	25219.65
643-0010	4900	LF	5.42	FIELD FENCE WOVEN WIRE	26558.00
668-1100	1	EA	1973.47	CATCH BASIN, GP 1	1973.47
668-1110	15	LF	228.88	CATCH BASIN, GP 1, ADDL DEPTH	3433.20
668-2100	24	EA	3528.70	DROP INLET, GP 1	84688.80
668-2110	30	LF	294.93	DROP INLET, GP 1, ADDL DEPTH	8847.90
668-4300	1	EA	2062.08	STORM SEWER MANHOLE, TP 1	2062.08
668-4311	13	LF	266.86	STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1	3469.18
668-6000	2	EA	2085.01	SPRING BOX	4170.02
Section Sub Total:					\$20,142,073.42

Section PERMANENT EROSION CONTROL					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
441-0204	5900	SY	33.82	PLAIN CONC DITCH PAVING, 4 IN	199538.00
603-2180	720	SY	45.90	STN DUMPED RIP RAP, TP 3, 12 IN	33048.00
603-2182	245	SY	44.81	STN DUMPED RIP RAP, TP 3, 24 IN	10978.45
603-7000	1100	SY	4.75	PLASTIC FILTER FABRIC	5225.00
700-6910	65	AC	871.61	PERMANENT GRASSING	56654.65
700-7000	276	TN	61.12	AGRICULTURAL LIME	16869.12
700-7010	225	GL	18.19	LIQUID LIME	4092.75
700-8000	50	TN	324.04	FERTILIZER MIXED GRADE	16202.00
700-8100	4500	LB	1.98	FERTILIZER NITROGEN CONTENT	8910.00

710-9000	3300	SY	4.18	PERMANENT SOIL REINFORCING MAT	13794.00
715-2200	12500	SY	2.04	BITUMINOUS TREATED ROVING, WATERWAYS	25500.00
716-2000	186400	SY	1.08	EROSION CONTROL MATS, SLOPES	201312.00
Section Sub Total:					\$592,123.97

Section TEMPORARY EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	25	AC	525.52	TEMPORARY GRASSING	13138.00
163-0240	1820	TN	206.32	MULCH	375502.40
163-0300	2	EA	2570.09	CONSTRUCTION EXIT	5140.18
163-0503	6	EA	558.89	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	3353.34
163-0521	100	EA	229.01	CONSTRUCT AND REMOVE TEMPORARY DITCH CHECKS	22901.00
163-0531	3	EA	8652.35	CONSTRUCT AND REMOVE SEDIMENT BASIN, TP 1, STA NO -	25957.05
163-0550	47	EA	354.30	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	16652.10
165-0010	4800	LF	1.40	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	6720.00
165-0030	11000	LF	1.45	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	15950.00
165-0040	100	EA	98.01	MAINTENANCE OF EROSION CONTROL CHECKDAMS/DITCH CHECKS	9801.00
165-0087	6	EA	225.17	MAINTENANCE OF SILT CONTROL GATE, TP 3	1351.02
165-0101	2	EA	604.61	MAINTENANCE OF CONSTRUCTION EXIT	1209.22
165-0105	47	EA	107.82	MAINTENANCE OF INLET SEDIMENT TRAP	5067.54
167-1000	2	EA	1262.78	WATER QUALITY MONITORING AND SAMPLING	2525.56
167-1500	15	MO	968.42	WATER QUALITY INSPECTIONS	14526.30
171-0010	9600	LF	2.03	TEMPORARY SILT FENCE, TYPE A	19488.00
171-0030	21900	LF	3.77	TEMPORARY SILT FENCE, TYPE C	82563.00
Section Sub Total:					\$621,845.71

Section SIGNING AND MARKING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1020	137	SF	15.69	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	2149.53
636-1029	24	SF	20.12	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	482.88
636-1031	180	SF	23.80	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING TP 6	4284.00
636-2070	300	LF	8.18	GALV STEEL POSTS, TP 7	2454.00
636-2090	220	LF	7.85	GALV STEEL POSTS, TP 9	1727.00
652-0094	4	EA	43.91	PAVEMENT MARKING, SYMBOL, TP 4	175.64
652-0110	4	EA	47.14	PAVEMENT MARKING, ARROW, TP 1	188.56
652-5301	2750	LF	0.45	SOLID TRAF STRIPE, 6 IN, WHITE	1237.50
652-5451	19600	LF	0.17	SOLID TRAFFIC STRIPE, 5 IN, WHITE	3332.00
652-5701	12	LF	2.53	SOLID TRAF STRIPE, 24 IN, WHITE	30.36
652-5801	24	LF	1.01	SOLID TRAF STRIPE, 8 IN, WHITE	24.24
652-6301	835	GLF	0.28	SKIP TRAF STRIPE, 6 IN, WHITE	233.80
652-6501	1150	GLF	0.31	SKIP TRAFFIC STRIPE, 5 IN, WHITE	356.50
653-0120	67	EA	69.61	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	4663.87
653-0170	10	EA	80.90	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	809.00
653-0210	6	EA	107.24	THERMOPLASTIC PVMT MARKING, WORD, TP 1	643.44
653-1501	20300	LF	0.38	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	7714.00
653-1502	36300	LF	0.43	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	15609.00
653-1704	310	LF	4.08	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	1264.80
653-1804	2230	LF	1.92	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	4281.60
653-3501	20100	GLF	0.27	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	5427.00
				THERMOPLASTIC SKIP TRAF STRIPE, 5 IN,	

653-3502	220	GLF	0.27	YELLOW	59.40
653-6004	6850	SY	2.86	THERMOPLASTIC TRAF STRIPING, WHITE	19591.00
653-6006	2710	SY	3.07	THERMOPLASTIC TRAF STRIPING, YELLOW	8319.70
654-1001	250	EA	4.02	RAISED PVMT MARKERS TP 1	1005.00
654-1003	510	EA	4.43	RAISED PVMT MARKERS TP 3	2259.30
Section Sub Total:					\$88,323.12

Section Major Structures					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
999-9999	1	Lump Sum	2656960.00	Bridge Over SR 293	2656960.00
Section Sub Total:					\$2,656,960.00

Total Estimated Cost: \$24,101,326.22

Subtotal Construction Cost	\$24,101,326.22
E&C Rate 10.0 %	\$2,410,132.62
Inflation Rate 5.0 % @ 1.0 Years	\$1,325,572.94
Total Construction Cost	\$27,837,031.78
Right Of Way	\$9,100,000.00 *
ReImb. Utilities	\$100,000.00
Grand Total Project Cost	\$37,037,031.78

OLD ALABAMA ROAD PHASE III

STP-2946(1); 621410

COST ESTIMATE

PRELIMINARY COST ESTIMATE

PROJECT NUMBER: STP-2946(1)

COUNTY: BARTOW

DATE: OCTOBER 17, 2006

ESTIMATED LETTING DATE: 2010

PREPARED BY: Jordan, Jones & Goulding, Inc.

PROJECT LENGTH: 5.77 miles

() PROGRAMMING PROCESS () CONCEPT DEVELOPMENT (X) DURING PROJECT DEV.

PROJECT COST										
				Quantity	Parcels	Unit Cost		Cost		
A. RIGHT-OF-WAY:										
1. PROPERTY (LAND & EASEMENT)										
a. Commercial Land and Improvements					AC					
b. Residential Land and Improvements				78	AC	\$	141,026	\$	11,000,000	
2. DISPLACEMENTS; RES: -, BUS: -, M.H.: -										
incl.										
3. OTHER COST (Damages)										
SUBTOTAL: A								\$	11,000,000	
B. UTILITIES:										
1. REIMBURSABLE UTILITIES:										
a. RAILROAD							\$		-	
b. TRANSMISSION LINES							\$		200,000	
c. SERVICES							\$		100,000	
GEORGIA POWER							\$		150,000	
BELLSOUTH							\$		-	
AGL							\$		-	
WATER							\$		-	
2. NON-REIMBURSABLE UTILITIES:										
SUBTOTAL: B								\$	450,000	
C. CONSTRUCTION:										
1. MAJOR STRUCTURES										
a. BRIDGES										
Widenings		Width (ft)	Length (ft)							
510'x41.58' EB SR 20 over Pumpkinvine Creek		41.58	510	21206	SF	\$90.00	\$		1,909,000	
BRIDGE to replace existing Culvert										
Old Alabama Road, STA 210+00 (Ryle Creek)										
30'x105' - 5 lanes with 16' median		41.58	120	9979	SF	\$70.00	\$		698,500	
BRIDGE to replace existing Culvert										
Old Alabama Road, STA 279+00 (Ward Creek)										
50'x105' - 4 lanes with 44' median		41.58	120	9979	SF	\$70.00	\$		698,500	
SUBTOTAL: C-1.a								\$	3,306,000	
b. OTHER (CULVERTS)										
CLASS A CONCRETE				475	CY	\$582.00	\$		276,000	
BAR REINF STEEL				53,030	LB	\$1.00	\$		53,000	
TYPE II BACKFILL				166	CY	\$50.00	\$		8,000	
SUBTOTAL: C-1.b							\$	337,000		
SUBTOTAL: C-1							\$		337,000	
2. GRADING AND DRAINAGE:										
a. EARTHWORK										
UNCLASSIFIED EXCAVATION				1011278	CY	\$7.00	\$		7,079,000	
IN PLACE EMBANKMENT					CY	\$6.00	\$		-	
BORROW EXCAVATION					CY	\$5.00	\$		-	
SUBTOTAL: C-2.a							\$	7,079,000	\$	7,079,000
b. DRAINAGE										
1) Cross Drain Pipe		SIDE ROADS								
STORM DRAIN PIPE, 18"		1200	250	1450	LF	\$41.11	\$		60,000	
STORM DRAIN PIPE, 24"		1200	250	1450	LF	\$52.67	\$		76,000	
STORM DRAIN PIPE, 30"		1000		1000	LF	\$65.18	\$		65,000	
STORM DRAIN PIPE, 36"		1000		1000	LF	\$81.31	\$		81,000	
STORM DRAIN PIPE, 42"		600		600	LF	\$111.48	\$		67,000	

PRELIMINARY COST ESTIMATE

PROJECT NUMBER: STP-2946(1)

COUNTY: BARTOW

DATE: OCTOBER 17, 2006

ESTIMATED LETTING DATE: 2010

PREPARED BY: Jordan, Jones & Goulding, Inc.

PROJECT LENGTH: 5.77 miles

() PROGRAMMING PROCESS () CONCEPT DEVELOPMENT (X) DURING PROJECT DEV.

PROJECT COST						
	Quantity	Parcels	Unit Cost			Cost
STORM DRAIN PIPE, 48"	600	600	LF	\$134.48	\$	81,000
SLOPE DRAIN, 10"	400	400	LF	\$27.00	\$	11,000
SLOPE DRAIN, 18"	200	200	LF	\$28.00	\$	6,000
FLARED END SECTION, 18" STORM DRAIN	46	46	EA	\$446.00	\$	21,000
FLARED END SECTION, 24" STORM DRAIN	32	32	EA	\$534.00	\$	17,000
FLARED END SECTION, 30" STORM DRAIN	6	6	EA	\$735.00	\$	4,000
FLARED END SECTION, 36" STORM DRAIN	6	6	EA	\$909.00	\$	5,000
FLARED END SECTION, 42" STORM DRAIN	4	4	EA	\$944.00	\$	4,000
CLASS A CONCRETE, INCL REINF STEEL	20	20	CY	\$850.00	\$	17,000
FLARED END SECTION, 18" SIDE DRAIN	10	10	EA	\$326.00	\$	3,000
FLARED END SECTION, 24" SIDE DRAIN	10	10	EA	\$432.00	\$	4,000
METAL DRAIN INLET, TYPE 1	20	20	EA	\$1,350.00	\$	27,000
SUBTOTAL: C-2.b.1				\$	549,000	
2) Curb and Gutter			LF	\$23.00		
SUBTOTAL: C-2.b.2				\$	-	
3) Longitudinal System						
STORM DRAIN PIPE, 18"	4480	4480	LF	\$35.00	\$	157,000
STORM DRAIN PIPE, 24"	1120	1120	LF	\$41.00	\$	46,000
DROP INLET, GP1	56	56	EA	\$1,873.00	\$	105,000
DROP INLET, GP2	15	15	EA	\$2,000.00	\$	30,000
SUBTOTAL: C-2.b.3				\$	345,000	
SUBTOTAL: C-2					\$	894,000
3. BASE AND PAVING:						
a. AGGREGATE BASE						
GAB - 12" - FOR PAVEMENT SECTION	192000	192000	TON	\$25.00	\$	4,800,000
GAB - 12" - FOR TEMPORARY PAVEMENT	12200	12200	TON	\$25.00	\$	305,000
SUBTOTAL: C-3.a				\$	5,105,000	
b. ASPHALT PAVING (Mainline & Cross-Roads):						
SURFACE - 12.5 mm SUPERPAVE - FOR PAVEMENT SECTION	3600	3600	TON	\$80.00	\$	288,000
SURFACE - 12.5 mm SUPERPAVE - FOR TEMPORARY PAVEMENT	500	500	TON	\$80.00	\$	40,000
BINDER - 19 mm SUPERPAVE - FOR PAVEMENT SECTION	48100	48100	TON	\$80.00	\$	3,848,000
BINDER - 19 mm SUPERPAVE - FOR TEMPORARY PAVEMENT	900	900	TON	\$80.00	\$	72,000
LEVELING - 19 mm - FOR PAVEMENT SECTION	17400	17400	TON	\$80.00	\$	1,392,000
SUBTOTAL: C-3.b				\$	5,640,000	
c. CONCRETE PAVING - 11" CRC	84600	84600	CY	\$70.00	\$	5,922,000
d. CONCRETE MEDIAN PAVING			SY	\$38.00	\$	-
e. OTHER						
LEVELING			TON	\$52.00	\$	-
TACK COAT	12000	12000	GAL	\$1.75	\$	21,000
PAVEMENT REINFORCING FABRIC STRIPS			LF	\$6.00	\$	-
MILLING - VARIABLE DEPTH	3000	3000	SY	\$5.00	\$	15,000
SUBTOTAL: C-3.e				\$	36,000	
SUBTOTAL: C-3					\$	16,703,000
4. GRASSING AND EROSION CONTROL						
a. GRASSING						
PERMANENT GRASSING	130	130	AC	\$892.00	\$	116,000
AGRICULTURAL LIME	130	130	TON	\$64.00	\$	8,000
LIQUID LIME	325	325	GAL	\$20.00	\$	7,000
FERTILIZER MIXED GRADE	208	208	TON	\$275.00	\$	57,000
FERTILIZER NITROGEN CONTENT	6500	6500	LB	\$2.00	\$	13,000
SUBTOTAL: C-4.a				\$	201,000	
b. CLEARING AND GRUBBING	141	141	AC	\$10,000.00	\$	1,410,000
c. LANDSCAPING					\$	-
d. EROSION CONTROL						

PRELIMINARY COST ESTIMATE

PROJECT NUMBER: STP-2946(1)

COUNTY: BARTOW

DATE: OCTOBER 17, 2006

ESTIMATED LETTING DATE: 2010

PREPARED BY: Jordan, Jones & Goulding, Inc.

PROJECT LENGTH: 5.77 miles

() PROGRAMMING PROCESS () CONCEPT DEVELOPMENT (X) DURING PROJECT DEV.

PROJECT COST					
	Quantity	Parcels	Unit Cost		Cost
TEMPORARY GRASSING	65	AC	\$510.00	\$	33,000
MULCH	1235	TON	\$244.00	\$	301,000
TYPE A SILT FENCE	14000	LF	\$2.50	\$	35,000
TYPE C SILT FENCE	56000	LF	\$3.50	\$	196,000
INLET SEDIMENT TRAP	101	EA	\$200.00	\$	20,000
SILT GATE, TP 3	28	EA	\$527.00	\$	15,000
TEMP PIPE SLOPE DRAIN	5000	LF	\$14.00	\$	70,000
BALED STRAW EROSION CHECK	3000	LF	\$3.00	\$	9,000
TEMP DITCH CHECKS	500	EA	\$207.00	\$	104,000
CONSTRUCTION EXIT	8	EA	\$1,318.00	\$	11,000
CONCRETE DITCH PAVING	5000	SY	\$32.00	\$	160,000
RIP RAP	2000	SY	\$50.00	\$	100,000
PLASTIC FILTER FABRIC	2000	SY	\$5.00	\$	10,000
EROSION CONTROL MATS	15000	SY	\$1.50	\$	23,000
MAINT TYPE A SILT FENCE	7000	LF	\$1.50	\$	11,000
MAINT TYPE C SILT FENCE	28000	LF	\$1.50	\$	42,000
MAINT INLET SEDIMENT TRAP	101	EA	\$95.00	\$	10,000
MAINT SILT GATE, TP 3	28	EA	\$177.00	\$	5,000
MAINT TEMP PIPE SLOPE DRAIN	2500	LF	\$5.00	\$	13,000
MAINT BALED STRAW EROSION CHECK	1500	LF	\$1.50	\$	2,000
MAINT TEMP DITCH CHECKS	500	EA	\$105.00	\$	53,000
MAINT CONSTRUCTION EXIT	24	EA	\$425.00	\$	10,000
SUBTOTAL: C-4.d			\$	1,233,000	
e. TRAFFIC CONTROL	1	LS	\$2,236,000.00	\$	2,236,000
SUBTOTAL: C-4				\$	5,080,000
5. MISCELLANEOUS:					
a. LIGHTING				\$	-
b. SIGNING - MARKING - SIGNALIZATION					
SIGNING & MARKINGS	5.31	MI	\$50,000.00	\$	266,000
TRAFFIC SIGNAL MODIFICATIONS AND INSTALLATIONS		EA	\$75,000.00	\$	-
SUBTOTAL: C-5.b			\$	266,000	
c. GUARDRAIL					
TYPE T GUARDRAIL		LF	\$56.00	\$	-
TYPE W GUARDRAIL	2100	LF	\$18.00	\$	38,000
TYPE 1 ANCHOR	3	EA	\$560.00	\$	2,000
TYPE 12 ANCHOR	7	EA	\$1,640.00	\$	11,000
TRAFFIC IMPACT ATTENUATOR	4	EA	\$14,500.00	\$	58,000
SUBTOTAL: C-5.c			\$	109,000	
f. TEMPORARY BARRIER					
PRECAST CONCRETE MEDIAN BARRIER, METHOD 3	20000	LF	\$39.00	\$	780,000
PRECAST CONCRETE MEDIAN BARRIER, METHOD 4	1000	LF	\$159.00	\$	159,000
SUBTOTAL: C-5.f			\$	939,000	
g. ACCESS FENCE		LF	\$6.00	\$	-
h. APPROACH SLABS	580	SY	\$135.00	\$	78,000
SUBTOTAL: C-5				\$	1,392,000
6. SPECIAL FEATURES					
PERMANENT RETENTION/DETENTION TO PROTECT DARTERS	8	EA	\$100,000.00	\$	800,000
SPECIAL GRADING AND LINING OF DITCHES TO FILTER WATER		CY	\$10.00	\$	-
SUBTOTAL: C-6				\$	800,000
SUMMARY					
A. RIGHT-OF-WAY				\$	11,000,000
B. REIMBURSABLE UTILITIES				\$	450,000
C. CONSTRUCTION					
1. MAJOR STRUCTURES				\$	3,306,000
Other Structures				\$	337,000

PRELIMINARY COST ESTIMATE

PROJECT NUMBER: STP-2946(1)

COUNTY: BARTOW

DATE: OCTOBER 17, 2006

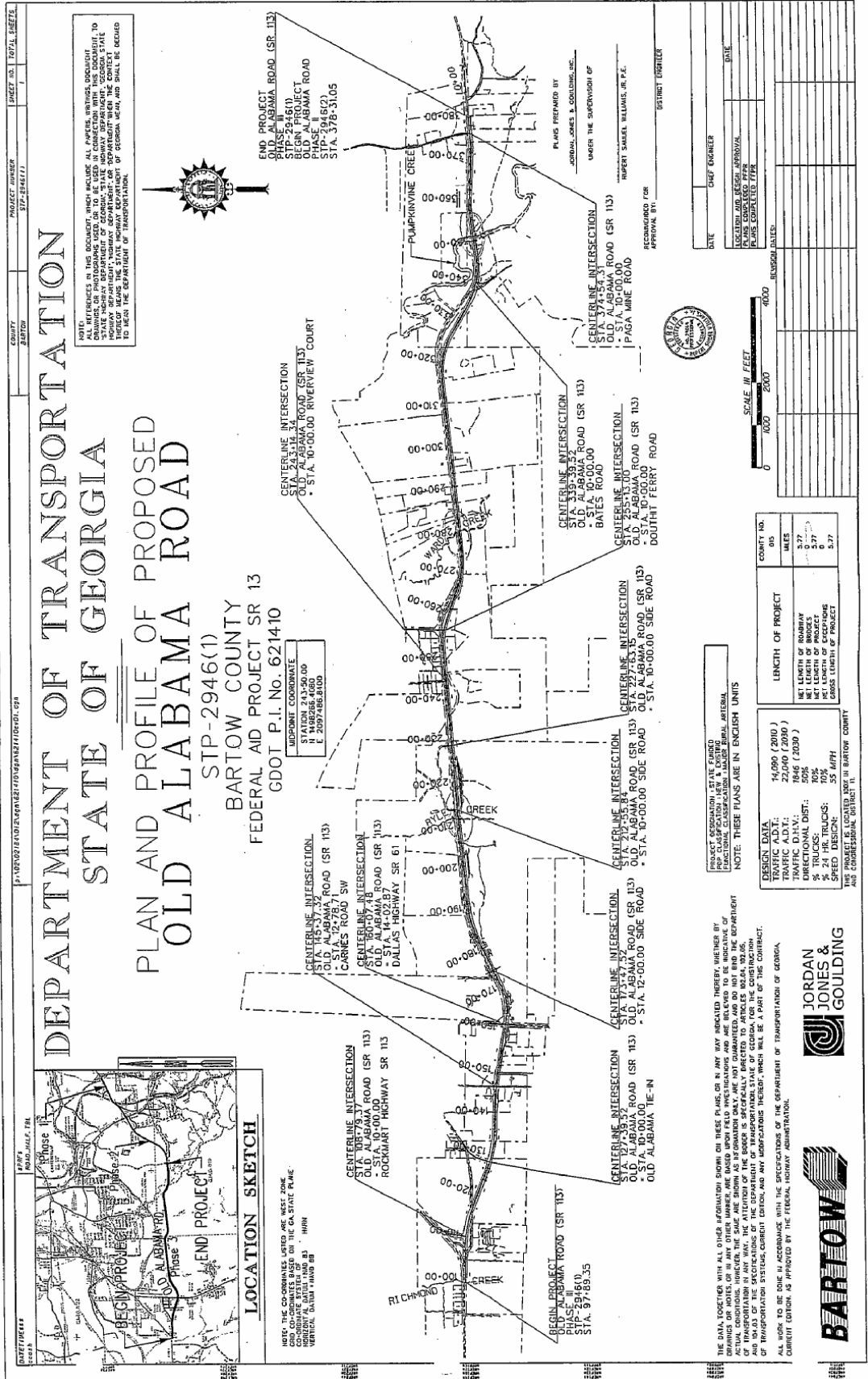
ESTIMATED LETTING DATE: 2010

PREPARED BY: Jordan, Jones & Goulding, Inc.

PROJECT LENGTH: 5.77 miles

() PROGRAMMING PROCESS () CONCEPT DEVELOPMENT (X) DURING PROJECT DEV.

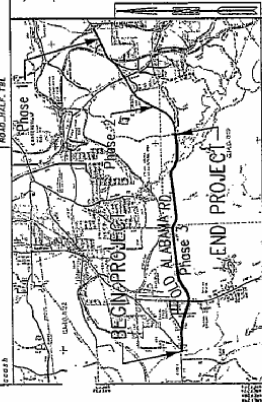
PROJECT COST			
	Quantity	Parcels	Unit Cost
2. GRADING AND DRAINAGE - EARTHWORK			\$ 7,079,000
DRAINAGE ITEMS			\$ 894,000
3. BASE AND PAVING			\$ 16,703,000
4. LUMP ITEMS			\$ 5,080,000
5. MISCELLANEOUS			\$ 1,392,000
6. SPECIAL FEATURES			\$ 800,000
SUBTOTAL CONSTRUCTION COST			\$ 35,591,000
INFLATION (5% PER YEAR)			\$ 3,648,000
NUMBER OF YEARS	2		
E. & C. (10%)			\$ 3,924,000
TOTAL CONSTRUCTION COST			\$ 43,163,000
GRAND TOTAL PROJECT COST			\$ 54,600,000



COUNTY: BARTOW
 PROJECT NUMBER: STP-2946(1)
 SHEET NO.: TOTAL SHEETS: 1

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA PLAN AND PROFILE OF PROPOSED OLD ALABAMA ROAD

STP-2946(1)
 BARTOW COUNTY
 FEDERAL AID PROJECT SR 13
 GDOT P.I. No. 621410



LOCATION SKETCH

NOTE: THE COORDINATES LISTED ARE WEST ZONE
 AND COORDINATES BASED ON THE GA STATE PLANE
 DATUM OF 1983. THE DATUM IS BASED ON THE
 MEAN SEA LEVEL DATUM OF 1983.

UTM COORDINATE
 STATION 243+50.00
 E 2097486.8100
 N 2097486.8100

THE DATA TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS, OR IN ANY WAY INDICATED THEREBY, WHETHER BY
 DEEDS OR NOTES, OR IN ANY OTHER MANNER, ARE HEREBY GUARANTEED AND DO NOT BIND THE DEPARTMENT
 OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF THE BORER IS SPECIFICALLY DIRECTED TO ARTICLES 102.04, 102.05,
 AND 104.03 OF THE SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF HIGHWAYS, WHICH WILL BE A PART OF THE CONTRACT.
 ALL WORK TO BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS OF THE DEPARTMENT OF TRANSPORTATION OF GEORGIA.
 CURRENT LAYOUT IS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

FINANCE ORGANIZATION: STATE FIDED
 PROJECT CLASSIFICATION: NEW A LOSTER
 NOTE: THESE PLANS ARE IN ENGLISH UNITS

DESIGN DATA	14,900 (2010)
TRAFFIC A.D.T.	22,040 (2030)
TRAFFIC A.D.T.	1846 (2030)
DIRECTIONAL DIST.	1026
PERCENT GRADE	10%
SPEED DESIGN	55 MPH
THIS PROJECT IS LOCATED IN BARTOW COUNTY	
AND CORRESPONDING DISTRICT 11	
LENGTH OF PROJECT	COUNTY NO.
NET LENGTH OF ROADWAY	015
NET LENGTH OF BRIDGES	0.77
NET LENGTH OF EXISTING	0.77
CROSS LENGTH OF PROJECT	0.77



PLANS PREPARED BY
 JORDAN JONES & GOULDING, INC.
 UNDER THE SUPERVISION OF
 ROBERT SAMUEL WILLIAMS, JR., P.E.
 RECOMMENDED FOR
 APPROVAL BY:

DATE	CHECK ENGINEER
LOCATION AND LEGAL INTERVIEW	DATE
PLANS COMPLETED TYPE	PLANS COMPLETED TYPE
PLANS COMPLETED TYPE	PLANS COMPLETED TYPE



